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Paper TRADE JOURNAL

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VOLUME 127, NO. 13

SEPTEMBER 23, 194

WOOD PULP

G

Established 1886

"O wonderful, wonderful,
and yet again wonderful!"
SHAKESPEARE

Consider the vast progress in chemical woodpulps since the turn of this century. Research and ingenuity, new machines and techniques have evolved an amazing array of "miracle products" from pulp.

Wonderful are the diversity of papers, rayons, plastics and specialties that are pulp-produced. But creative imagination and constant improvements continue to make pulp a prolific source of new comforts and conveniences for a good life.

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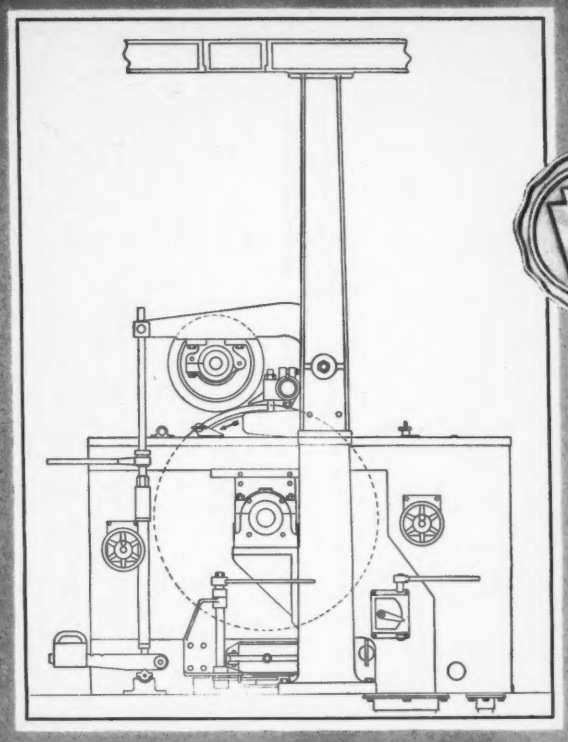

Welded Stainless Steel CONFLOW* Vat

with Suction Slice

The modern Downingtown CONFLOW* VAT, as its name implies, is a counterflow type, this design being "all stainless steel," including the stock inlet and white water outlet. It can be equipped with one or two Retractable Puette Rectifiers, as required. It has an Adjustable Making Board, with Adjustable Wing Boards and Auxiliary Wings. It can be built with or without an Adjustable Overflow. Leakage between the cylinder mould and the vat ends is prevented by a new special design of Chime Ring Sealing Strap. Couch Roll is provided with a recently designed Downingtown Suction Slice and both Couch and Cylinder Mould are mounted in anti-friction bearings. Pedestal Mounts are provided to take the weight of the mould, bearings, couch, felt rolls, etc., supporting the load from the floor, with no strain on the vat. Ample clean-out facilities are provided and everything about this and other Downingtown Vats is for assurance of a well formed sheet of uniform weight and caliper. Write us.

DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

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DOWNINGTOWN

Designers & Builders

Paper Making Machinery

Second of a Series of Vat Advertisements featuring Modern Designs now being built by the Downingtown Mfg. Co.

IN THIS ISSUE

SEPTEMBER 23, 1948

Cease And Desist Order Issued	7	PRICES	32
Supt's Meet At Kalamazoo	7	MARKETS	34
Twitchell Plant Improvements	8	FINANCIAL RECORD	36
Canadian Mill Position Evaluation	9	OBITUARY	38
Ireland To Make Chipboard	9	PRODUCTION RATIO REPORT	38
Foresters To Meet In Boston	9	Congress Committee Awards Fourth-Quarter Paper Contracts	40
What About The Paper Market?	10	INDUSTRIAL DEVELOPMENT	43
$22,500,000 Stream Control	10	Brightness Determination of Paper Clays	43
U. S. D. A. Insect Control Projects	11	Powell River Co. Ltd. Expansion	46
Metropolitan Tappi Meeting	14	EQUIPMENT AND SUPPLIES	48
NPTA Chicago Meeting	16	TAPPI SECTION	51
Kalamazoo River Pollution Cut	18	Nitration of Wood Pulp	51
Excessive Tree Cutting Unwise	18	CLASSIFIED ADVERTISING	60
TRENDS	26		
IMPORTS	28		

INDEX TO ADVERTISEMENTS ON PAGE 74

Volume 127 **Number 13**

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

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Bibliotekgatan 6-8, Stockholm, Sweden

Subscriptions: (Payable in advance) By the year, $5.00; Single Copy, 15 Cents. *Postage Extra: To Canada,* $2.00; *To Other Foreign Countries,* $3.50. Member Audit Bureau of Circulation.

PAPER established Feb. 17, 1899, combined with PAPER TRADE JOURNAL, *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL, *Feb. 19, 1926. All rights to the above titles reserved.*

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PAPER TRADE JOURNAL *is indexed in Industrial Arts Index and Engineering Index.*

CALENDAR OF COMING EVENTS

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

SEPTEMBER 23-25: Northeastern Division Meeting, American Pulp & Paper Mill Superintendents Ass'n. Poland Springs House, Poland Springs, Maine.

SEPTEMBER 27-29: TAPPI Mechanical Pulping Conference (Joint meeting with CPPA Technical Section) Poland Springs House, Poland Springs, Maine.

OCTOBER 11-14: TAPPI Testing Methods Conference at Mellon Institute, Pittsburgh, Pa. Headquarters, William Penn Hotel.

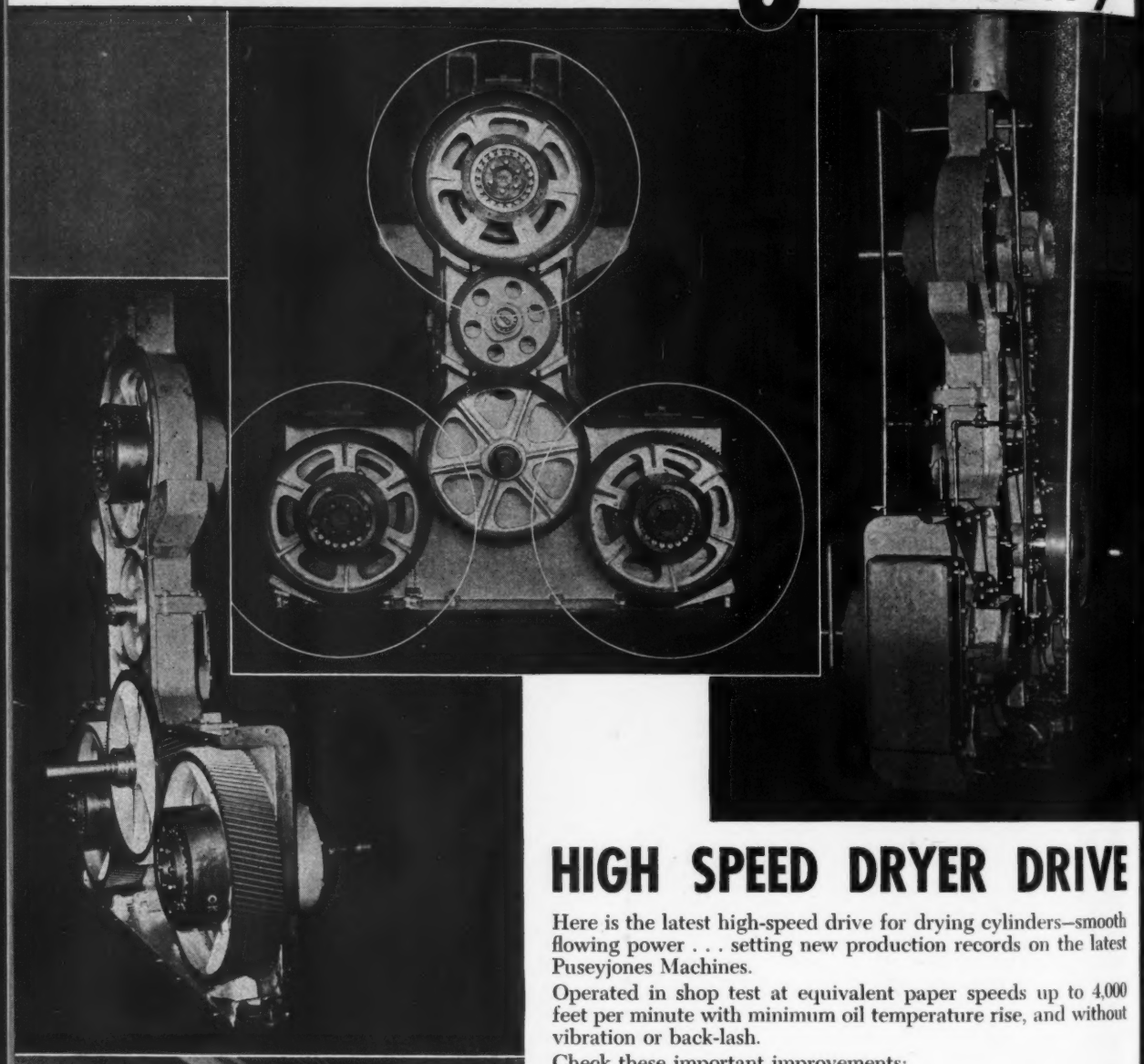
OCTOBER 12-16: Fifth National Chemical Exposition. Coliseum, Chicago, Ill. For details, write to Marcus W. Hinson, manager, care of Chicago Section, American Chemical Society, 1505 South Wabash avenue, Chicago 5.

OCTOBER 21-23: Joint Meeting, Southern and Southeastern Superintendents Divisions. Biltmore Hotel, Atlanta, Ga.

OCTOBER 25-28: Third Engineering Conference of the Pulp and Paper Industry sponsored by TAPPI. Statler Hotel and Westinghouse Electric Co., Auditorium, Buffalo, N. Y.

OCTOBER 28-30: National Paper Trade Ass'n., Fall Convention. Stevens Hotel, Chicago, Ill. For details write to Arthur H. Chamberlain, 220 East Forty-Second Street, New York 17, N. Y.

PAPER · · · America's 6th Industry



HIGH SPEED DRYER DRIVE

Here is the latest high-speed drive for drying cylinders—smooth flowing power . . . setting new production records on the latest Puseyjones Machines.

Operated in shop test at equivalent paper speeds up to 4,000 feet per minute with minimum oil temperature rise, and without vibration or back-lash.

Check these important improvements:

(1) Each idler gear supported by two heavy-duty bearings;
(2) All gears dynamically balanced;
(3) Interior channelways for delivering oil direct to each idler gear;
(4) All outside cover plates may be removed in sections for convenience when replacing gears and bearings;
(5) Dryer bearings located outside dryer gears for easy removal.

The new high-speed Dryer Drive is another outstanding development of Puseyjones, complementing the "Rapi-Drape" Wire Changer, the Flow Spreader, the "Simplex" Press Part, the Stream Flow Vat System, the Stream Flow Cylinder Mould and the improved Steam Joint. For the latest Fourdrinier Machine, Cylinder Machine, Yankee Machine, or a modification of any of these types — see Puseyjones first.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL
REG. U. S. PAT. OFF.
VOL. 127, NO. 13 SEPTEMBER 23, 1948

Cease and Desist Order Issued

WASHINGTON—The Federal Trade Commission has ordered 33 manufacturers and six trade associations to cease and desist from an unlawful combination to fix prices and eliminate competition in the manufacture and sale of various types of tickets and related products. The order also includes a and interurban railways, bus companies, airlines, railroads and clothing manufacturers.

The order is directed at manufacturers of products described in the findings as "amusement tickets," "restaurant checks," "coupon books," "clothing tickets," "transit tickets" and "railroad tickets." These tickets and coupons, the findings said, are used by operators of various establishments and businesses such as bathhouses, swimming pools, horse and dog shows, races, fairs, carnivals, games, theaters, restaurants, cafes, hotels, clubs, soda fountains, city and interurban railways, bus companies, airlines, railroads and clothing manufacturers.

Findings of the Commission said that the manufacturers agreed upon "identical and uniform prices, discounts, surcharges, and extra charges" to be used in the sale of the various types of tickets. In addition, the findings stated, the manufacturers adopted an "open price filing plan," and formulated a 'code of symbols." The "open price filing plan" together with the "code of symbols," permitted the respondents to detect deviations from announced prices, according to the findings.

The findings also showed that the manufacturers periodically prepared and adopted "guides of fair value" which were used to designate specific charges to be made for each item of variation where the size, printed matter or other characteristics of "tailor-made" or "special made" tickets deviated from that of the standard tickets. This plan enabled the respondents to charge "identical and uniform prices" for "special made" tickets, according to the findings.

Other findings of the Commission showed that the manufacturers standardized products as to size, style and color and as to weight and quality of paper and cardboard used in manufacturing them; and held meetings of the membership of the various associations, and of committees acting for the associations and for their members, where "prices were discussed and fixed and action taken to eliminate competition."

The six associations, according to the findings, were organized by the manufacturers and acted as "clearing houses or central agencies" to effectuate the conspiracy. The partnership of Gooch & Co., was employed by the associations "to make plans and to aid, assist and direct" the manufacturers in effectuating the conspiracy, the findings said. Gooch & Co., received reports from the manufacturers of all sales below agreed prices, according to the findings, and Joseph Gooch, Jr., was empowered to "arbitrate and adjust" all disputes growing out of such sales.

Finding the acts and practices violative of the Federal Trade Commission Act, the Commission prohibited the respondents, in connection with the sale of tickets or coupons, from entering into continuing or carrying out any combination, conspiracy or planned common course of action to engage in any of the following practices:

Establishing or maintaining prices, terms or conditions of sale or adhering to any such fixed prices.

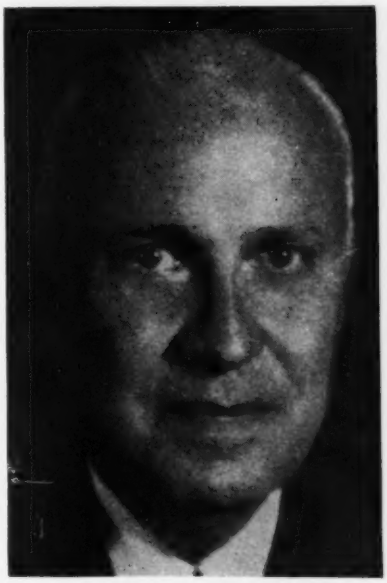
Employing or utilizing any central agency to aid in formulating plans for fixing or maintaining prices.

Exchanging price lists or schedules or any

(Continued on page 16)

Supt's Meet at Kalamazoo

KALAMAZOO, Mich.—Eighty persons attended the first fall meeting of the Michigan division of the American Pulp & Paper Mill Superintendents Ass'n., at Hotel Harris the evening of September 16.



HENRY M. HOWLETT

—elected president of Container Laboratories, Inc., comes to his new post after 13 years as secretary of the American Management Ass'n., and director of the National Conference on Packaging, Packing and Shipping, sponsored by that organization.

Principal speaker was L. E. Randecker, who presented a paper on "The Controlled Flow Victory Beater." The program was arranged by C. B. Smith, Kalamazoo representative of the Noble & Weed Machine Co., Hoosick Falls, N. Y.

Panel Discussion

A panel discussion following the presentation was conducted by Glen Sutton. Sutherland Paper Co.; William H. Astle, Michigan Paper Co., and Al Pellick, Kalamazoo Vegetable Parchment Co.

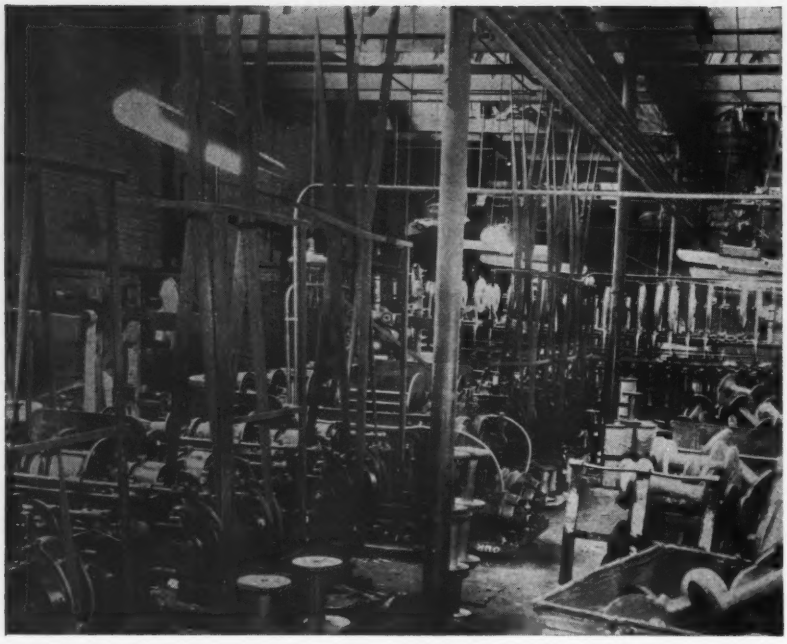
Other speakers included Harry E. Weston, assistant secretary-treasurer of the national association, and Dr. Alfred Nadleman, head of the new pulp and paper school at Western Michigan College. Hubert Johnston, Allied Paper Mills, division chairman, presided.

Astle Wins Recognition

An added feature was the presentation to Mr. Astle, last year's division chairman, of a recognition award certificate. Mr. Sutton, fourth vice-president of the national association, made the presentation.

A social hour preceding the dinner was sponsored by the Noble & Wood Machine Co.

The division's next meeting, on the general subject of "De-Inking and Bleaching Waste Paper," will be held at Hotel Harris the evening of Oct. 21.



BEFORE: Better lighting and more room for employes to work have been twin goals of the half-million dollar Twitchell improvement program. This photograph, taken last spring, shows a part of the plant before modernization.

Twitchell Plant Improvements

PHILADELPHIA—A half-million dollar improvement program at the plant of E. W. Twichell, Inc., Third and Somerset streets, manufacturer of automobile seat cover material, paper rug backing, and other paper products for industrial uses, has moved another three steps nearer completion.

New office space was occupied early in September. And at approximately the same time the entire battery of new looms and other machines installed on the second floor of the plant went into full operation. A third part of the program completed a few weeks ago was moving the shipping department from the basement to the first floor.

The new offices, located on the fifth floor, include approximately 9,000 square feet, about five times as much space as the old offices on the second floor. They will be occupied by sales and administrative personnel.

Upstairs installations have been progressing since about the first of the year. Much of the old machinery was formerly housed in the so-called weave shed. Transfer of the equipment upstairs has given employes more room in which to work and better lighting. The program has also included purchase of new beaming machines which have been installed on the fourth floor, and slitting machines in the basement. Cordage and hamper material departments occupy the third floor.

At the same time the weave shed has been transformed into a warehouse in which mill rolls of paper are stored. By building up the warehouse supply at the plant, the Twitchell company will eliminated warehousing in the central city with its attendant problem of deliveries daily by truck.

Balance of the improvement program will center on that part of the fifth floor not now being used for offices, and on the basement.

AFTER: This picture, taken recently, shows some of the Twitchell machinery after it had been relocated upstairs in the plant.

ECA Authorizations

WASHINGTON. — Latest procurement authorizations for woodpulp under the ECA program announced on September 13 include the following: For Bizonal Germany, unbleached sulphate wood pulp originating in Sweden, $3,110,000; bleached sulphite wood pulp, from Sweden, $342,000, plus ocean freight aggregating $217,000; unbleached sulphite wood pulp, from Sweden, $1,655,000, plus $13,000 ocean freight; for France, a decrease of $6,500 in the amount of wood pulp to be procured in Canada.

P. O. Aiding Letter Week

WASHINGTON—The Post Office Department, planning to participate in observance of National Letter Writing Week, October 17-23, is urging the use of slogans on metered mail calling attention to the Week. Manufacturers of postage meters have prepared slogan dies which may be obtained from them for this purpose.

"Paper Merchandising" Sold

NEW YORK—Walden, Sons & Mott, Inc., publisher of *Paper & Paper Products*, has acquired *Paper Merchandising* from the Lockwood Publishing Co. Subscriptions to the latter publication will be transferred to *Paper & Paper Products* and the lists are now being consolidated, the purchaser states.

Barlow and Tabb Bills Defeated

MADISON, Maine—As a result of the election held on September 13, both the Barlow and the Tabb bills were defeated, Rose Pearl Danforth, public relations counselor, reports to *Paper Trade Journal*.

Canadian Mill Position Evaluation

TORONTO, P. Q.—Discussing Canadian pulp and paper companies, a Toronto *Globe and Mail* financial writer said on September 11:

Abitibi Power & Paper Co. common had an equity of $22.06 a share last year. It sold at 17¾ at the close of trading yesterday. Its high this year was 19¾ and its low 12½. It pays no dividend as yet, but earned $5.11 a share in 1947 as compared with $2.72 in 1946 and it is reported in newsprint circles to be doing much better this year than in 1947. It is working on a heavy rehabilitation program, has successfully paid its way out of bankruptcy and can be expected, with its research program to diversify production as time and opportunity permit. The total output and results for 1948 should be well up because of greater output and higher prices.

Consolidated Paper Corp. For the first half of 1948 this company earned $6.3 million or $2.50 a share on common as compared with $3.79 for all of 1947. Its stock closed at 20¼ yesterday as compared with a low point of 14¾ this year and a high of 21⅝ in 1947. It is expanding capacity and is meeting a heavy demand for most of its products.

Great Lakes Paper. Closing price for common yesterday was 18¼ against a low of 15⅝ and a 19⅝ high in 1947. Earnings for the first half of 1948 were equal to $2.18 per share against $1.76 for the first half of 1947 which in turn was much greater than in 1946. The company is still modernizing facilities and expanding production. It is paying a quarterly dividend of 40 cents this week after all other payments.

Price Bros. & Co. More than 130 years old, this company has continued in the pulp and paper business the success predecessor companies had in lumber. The stock closed at 62 yesterday against a high of 68 and a low of 54½ in 1948. There is an equity of $79.45 behind this stock. In 1947 it had a net profit equal to $10.80 a share as against $8.32 in 1946. H. J. Symington, chairman of the board, said at the annual meeting that the company was in a position to pay off its bonds and preferred stock if it wished to do so. Even then its working capital would be favorable.

Bathurst Paper Co. News item elsewhere on this page shows this company shares in the general advance. So do *Donnacona* and *Donahue Bros.* and *Dryden.*

International Paper Co. This company had first quarter net earnings of $13.3 million and second quarter earnings of $15.2 million. Its 1947 earnings were nearly twice as much as in 1946. This year it continues to look after dividends while pursuing the 1948 part of a $47 million expansion program and looking after possible price declines with inventory adjustment reserves and capital replacement needs.

Ireland to Make Chipboard

By E. Maitland Woolf

DUBLIN, Ireland — Two important developments in the box and container making industry are being undertaken by a local firm, Messrs. Jefferson Smurfit & Sons, Ltd., who are rebuilding their Rathmines factory after a fire which destroyed a large part of their works last March. The plant itself was not destroyed, and is already in full production. New items of machinery have been added, and the company will be producing circular boxes and cartons to the extent of at least 1,000 gross per week, in addition to their rigid and other box production.

Messrs Jefferson Smurfit will be the first firm in the whole of Ireland to manufacture chipboard, for which purpose they have ordered a new plant, some units of which will come from America; some from Britain; and some are being made in Ireland.

It is expected that all this new machinery will be put into operation in October. It will be used for production of paperboard for their boxes and containers, and the firm will be in a position to supply all their own raw material from waste paper, which they will collect from their own customers.

"We want to be as nearly self-supporting as is possible," said Mr. Smurfit, and added, "The firms who produce their own raw materials are usually more efficient."

Hitherto, 90 percent of the chipboard coming into Ireland has come from Holland, but substantial imports will continue because Messrs. Jefferson Smurfit do not propose to supply other firms, which would, they say, defeat their own object.

The present staff is about 150, but this will be increased by at least 100 when the new plant goes into production.

There will be no question of exporting, since the refusal of Britain to allow entry of Irish cartons was confirmed when the matter was raised at the recent negotiations for the trade agreements; America being already well equipped, does not need to import such goods.

The second development in the container making industry being undertaken by Jefferson Smurfit's is at present in the experimental stage. They have been working for some time on a new machine, which if successful, will be capable of extruding from pulp, cardboard cylinders in the same way as metal pipes are extruded, thus ending the present practice of making up and glueing cardboard cylinders.

This machine is now in the blueprint stage, but if it is successful, the cost of cardboard cylinders will be cut by at least 50 percent and Ireland will have won an industrial triumph.

The firm of Jefferson Smurfit & Sons, Ltd., was established as Magee & Sons in 1933, but in 1938, when Mr. Jefferson Smurfit became managing director, the name was changed.

Synthetic Yarn Growth Seen

NEW YORK — Continued growth of synthetic yarns, particularly cellulose acetate, in the textile market is forecast in a research analysis of Celanese Corp. of America by Kidder, Peabody & Co. The Celanese Corp. is said to be the world's largest producer of cellulose acetate.

Foresters to Meet in Boston

BOSTON—The annual meeting of the Society of American Foresters will be held at the Statler Hotel, December 16-18. Attendance of 500 members and guests is anticipated.

Clyde Martin of Tacoma, Wash., president of the Society, reports that the national meeting will open on December 16, with individual sessions of the Society's nine divisions having to do with private forestry, forest economics, forest recreation, forest products, forestry education, wildlife management, range management, silviculture, and public relations. Nonmembers are welcome to attend.

The fiftieth anniversary of professional forestry education in America, which began at Cornell University in 1898, will be observed at the general session on December 17 with addresses by well-known forestry educators. In the evening the Society's annual dinner for members, their ladies, and guests will be served in the Statler.

At the final session on December 18, technical papers on forest practices in the Northeast will be given by representatives of federal and state governments and the forest products industries.

Organized in 1900, the Society has a membership of 6,000 technically trained foresters in the United States and Canada. Its headquarters are at 825 Mills building, Washington, D.C.

What About the Paper Market?

Commenting upon the paper market as it applies to the Mead Corp., J. R. Atwater, assistant to the president of the Mead Sales Co., said, in part, in *The Reporter,* Mead house organ:

"Many of our friends in the paper business—both producers and consumers—are somewhat pessimistic concerning the market for paper. Others are equally optimistic, especially concerning the immediate future. However, a great majority of both groups will admit that in total we are still experiencing a 'good' market by comparison with the late '30s. But even the optimist must admit that the cat has been licking the cream from the top of the bottle. The paper buyer has become more selective and now has more of an opportunity of shopping for his product than at any time during the past six years.

"Despite this 'good' market, the customer is complaining. Not because prices are too high—he realizes that other products have advanced as much or more than paper prices—but because of quality.

"We ask: 'Why should it be that almost overnight we should begin to receive complaints concerning certain qualities of our package and its contents, neither of which has been changed to any extent since the complaints began to flow? Does the paper suddenly become full of defects?' Obviously not.

". . . during the war . . . raw materials were short, paper was in great demand, and yet no one so far as we know suffered from real lack of paper. Other things happened which were beyond control: wood was poor, pulps were dirty, waste paper stock was far below pre-war standards for objectionable materials, chlorine was scarce for bleaching purposes and so on to many other items . . . Thus it was that most paper, based on pre-war standards, became sub-standard, which is equally true of the materials in which they were packed for shipment.

"The customer did not complain of these conditions. He was too glad to obtain delivery of anything which would work on his press or in his converting machines. Slime spots, wrinkles, hairpins, and a poor grade of chewing tobacco packed in green lumber could have been almost unnoticed in so far as complaints were concerned. Nevertheless, certain defects were common and were sometimes brought to our attention in a friendly manner under the heading of 'constructive criticism.'

"This attitude prevailed until about three months ago when many paper buyers began to realize that it was no longer difficult to obtain most grades of paper and, as a matter of fact, that it was being offered to them by producers who possibly had not darkened their doors for years. . . .

"We know our average customer to be a good one. . . . Therefore, when he begins to send in complaints against our paper, we must realize that it is something more than a desire to 'get even' with us for the paper made to war standards and accepted by him during the past few years. His customers, too, are becoming fussy. The magazine advertisers, the book publishers, commercial printers and converters are all looking for a better medium for their final products. Therefore, we must indirectly satisfy them as well as the direct buyers of our own products.

"The above is not meant to convey the impression that no quality improvements have been made since 1945. To the contrary, many things have been improved. Other desirable qualities—or perhaps better—a reduction of defects, have not kept pace.

"Volume has, at least temporarily. ceased to be the one major problem in our customers' lives. . . . Now they demand better quality, and we can't blame them—any of us.

"Who is to blame for the condition? No one and yet everyone. It is, rather, a change in the merchandising picture which we must be smart enough to recognize and act upon.

"As an organization progresses as the Mead Corp. has, it can not be content to find a few customers and, resting on its laurels, assume that these few will indefinitely continue to take the output of its manufacturing plants. As soon as this becomes the policy of any company, a type of depreciation sets in which can not be carried on the books and from which the company will never recover. Thus, paper machines must be speeded up and new products developed, along with new markets, to avoid this stagnation. To do this the sales organization must forever be on the search not only for new customers for present grades manufactured, but for those types of new products which can be made on existing or new equipment.

"So much to date.

"The paper market for the immediate future? You guess too, but we think 'good', through 1949.

"Even now there is a varying demand for different grades of paper. In our own case, hard papers are up, book publishing papers down. You recollect Mead Cockle-Bond of pre-war development. We have numerous places to sell this grade, but have declined to attempt its manufacture until we can obtain the quality of pulp necessary. It is oft-times better to have none to offer than to merchandise an inferior product. And yet coated-one-side papers are going begging. . .

"Very few of our troubles are of large magnitude. Probably, 90 percent of them are such that they can be controlled by the same care and pride in the product that has marked our past progress.

"So finally, we enter a plea to all to help us in the sale of Mead paper to the old and good customers which we have, and to the new ones which we will have in the future, by so controlling the quality of the product that we can dispose of it to the best advantage."

Scioto Erecting Building

COLUMBUS, Ohio—The Scioto Paper Co. has been granted a permit for erection of a $168,000 office and warehouse building at 808 Rhoads avenue.

$22,500,000 Stream Control

CONCORD, N. H.—Governor Charles M. Dale on September 4 notified paper manufacturers of the designation of the New Hampshire Water Pollution Commission to cooperate in a new federal anti-pollution program.

The state agency will participate in a stream control plan passed by the last Congress, which authorized an appropriation of $22,500,000 annually for the work.

Gov. Dale said he has notified the U. S. Surgeon General that the state pollution agency will represent New Hampshire in pollution control efforts.

The U. S. Public Health Service will establish an office in each watershed area to serve as an operating center to cooperate with state, inter-state agencies, municipalities and industries.

New Hampshire is well advanced on water pollution control measures, according to Leonard W. Trager, technical secretary of the pollution commission.

The commission, set up by the 1947 State Legislature, already has tested more than one-third of the state's streams and rivers preliminary to recommending classification of those waters to the next Legislature.

Two groups of crews have been working this summer, testing water throughout the state, Trager said. One group had headquarters at the commission's new laboratory at Concord, and the other worked out of a mobile trailer.

Under the new federal pollution act, the surgeon general can order the state pollution commission to conduct investigations and research.

If the surgeon general's office finds a case where pollution is a "public nuisance," it can order the state agency to take remedial action or, if necessary, to initiate a court suit against the offenders.

New Hampshire has prosecuted one case of illegal pollution since the 1947 law was passed. A Boston, Mass., chemical company was fined for dumping poisonous material in the Piscataquog River near Manchester earlier this year.

Aiding Travelers Aid Drive

NEW YORK—Norman F. Greenway, vice-president of the Robert Gair Co., Inc., is chairman of the Paper Carton Manufacturers and Converters Division in the 1948 fund drive for the Travelers Aid Society of New York, which has a goal of $409,000 and which began on September 21.

Other men in the paper and related fields who are active in the drive are: James F. Levens, president of George W. Millar & Co., Inc.; I. Schrier of Schrier Bros., Inc.; Jack Moore, of the Southern Kraft Division of the International Paper Co.; Arthur W. Pohlman, of the A. W. Pohlman Paper Co., Inc.; Harry J. Smith, vice-president and treasurer of Berlin & Jones Co., Inc., and Harry Elias, of Harry Elias & Co., Inc.

American Realigns Schedules

HOLYOKE, Mass. — Realignment of the schedules of machines at the Mount Tom Division of the American Writing Paper Corp., for experimental purposes was given on September 4 by Edward C. Reid, company vice-president, as the reason for one-shift operations at the mill.

Mr. Reid said he could not predict how long operations would continue on the present basis. The plan was inaugurated, he stated, "to meet the conditions of today." He disclosed that only one of the two machines at Mount Tom was in use on the 7 a.m. to 3 p.m. shift. Normally, both machines are utilized on three shifts.

Several months ago the Parsons division shut down operations.

Hampden Invading Midwest

HOLYOKE, Mass.—Ralph C. Burgess, production manager of the Hampden Glazed Paper & Card Co., has left for Columbus, Ohio, to open and manage the firm's new mid-west sales office. His successor is Frank N. Fowler, presently assistant purchasing agent. Mr. Fowler is the son of Ralph N. Fowler, president of the firm.

Mr. Burgess will manage sales in Ohio, western New York, eastern Michigan, western Pennsylvania, Kentucky and West Virginia. The Columbus office marks Hampden Glazed Paper's first venture into the mid-west territory.

Johnson Bemis' Traffic Head

CHICAGO—Erik A. Johnson has been appointed general traffic manager of the Bemis Bro. Bag Co., succeeding W. R. Huey who died on August 22.

Mr. Johnson joined Bemis at Brooklyn in 1921 as foreman in charge of shipping and receiving. He has been traffic manager at the Bemis Brooklyn plant since 1926 and has also handled traffic for the company's Boston Jute Department for many years. For the past two years he has been a director and chairman of the Traffic Committee of the Merchants and Manufacturers Ass'n. of Bush Terminal, Brooklyn.

U.S.D.A. Insect Control Projects

WASHINGTON — The first year following passage by Congress of the Forest Pest Control Act on July 27, 1947, witnessed the waging of the most extensive campaign against timber-destroying insects ever carried out on National Forests and neighboring National Park, State and Private land, the Forest Service in the U. S. Department of Agriculture reported on Sept. 13.

While the final report on the cost of this summer's widespread insect projects is not yet available, indications are that by using new methods some of the activities will be less costly than expected. More than 800 operatives, including government entomologists, foresters, technicians and other workers were employed. In all, some 15,000 acres were sprayed from helicopters or airplanes and about 160,000 trees were individually sprayed with insecticide from the ground in Oregon, Idaho, Wyoming, South Dakota, Montana, Michigan and Wisconsin.

Under the Forest Pest Control Act a deficiency appropriation of $843,000 was made available in April for use in the remainder of this calendar year.

Latest reported upon, and perhaps of most widespread significance, since the insect involved has for years been making costly inroads on spruce and fir forests from New England to the Pacific Northwest and in Canada, is the experimental control project against the spruce budworm which was waged on a 4,200-acre tract about 35 miles south of Heppner in eastern Oregon. This was a cooperative undertaking by the Oregon State Board of Forestry, the Bureau of Entomology and Plant Quarantine, and the Forest Service.

In the eastern Oregon operation, the 4,200 acre tract, including National Forest, State and private land, was divided into twelve 350 acre plots. These test plots were sprayed with DDT in fuel oil from helicopters and airplanes; with comparable adjacent areas left as "checks." Spraying began in mid-June after the budworm emerged as worms or caterpillars from their cocoons in the crevices of the tree trunks where they had spent the winter, and began devouring tree needles. Spraying was completed on the experimental tract on July 2.

Results showed that where the trees were sprayed with one pound of DDT in one gallon of fuel oil per acre — three or four different dosages were tried on the various plots — the worm kill was 95 percent or more.

Another control project involved spraying 110,000 individual trees on 1,000,000 acres of forest land in the Caribou and Targhee National Forests of southeastern Idaho, and the Bridger and Teton National Forests and the Grand Teton National Park in western Wyoming. The largest of its kind ever attempted in the United States, this project was to control an epidemic infestation of the mountain pine beetle.

This insect epidemic jeopardized mature lodgepole pine stands from which on a sustained-yield basis 60,509,000 board feet of timber valued at $213,000 was sold last year, as well as similar stands in the Grand Teton and Yellowstone National Parks and the Jackson Hole National Monument.

Since the older methods of felling and barking the trees to kill the young beetle hoods under the bark was too costly, the entomologists proposed spraying the trunks of the standing trees with chemicals that would penetrate through the bark. Two sprays were used: one, a chemical called orthodichlorobenzene mixed with fuel oil and another, benzene hexachloride diluted in fuel oil. "Spotters" first went through the forests, marking the infested trees. They were followed by operatives in protective clothing who applied the chemical mixture with spray guns. About 500 men began the campaign on May 1. All the infested trees had to be sprayed before the last week in July, when the mature beetles begin to emerge from the infested trees and to burrow healthy trees.

Those in charge of the project report that billions of these tree killers were trapped and destroyed. In this case, technical work on the project was handled by the Coeur d'Alene, Idaho, Forest Insect Laboratory of the Bureau of Entomology and Plant Quarantine and the administrative and field work by the Forest Service.

Another outstanding war on a serious beetle infestation was waged during the spring and summer in the Harney and Black Hills National Forests of South Dakota. The procedure and chemical used were the same as those employed in the lodgepole pine forests of Idaho and Wyoming, though the trees under attack were ponderosa pine. Technical advice on the project came from the Fort Collins, Colo., Forest Insect Laboratory of the Bureau of Entomology and Plant Quarantine.

Smaller anti-forest pest campaigns completed this summer were these: On the Kootenai National Forest in western Montana where 4,000 trees on 1,300 acres, infested with mountain pine beetles, were sprayed; on the Coeur d'Alene National Forest in Idaho where some 1,700 trees similarly infested on 14,000 acres were treated; and in the National Forests of Michigan and Wisconsin where epidemics of Leconte's sawfly and the Saratoga spittle bug on some 9,300 acres threatened to spread, if not controlled, to 640,000 acres of forest service plantations which represent a government investment of more than $25,000,000. Spraying in these forests was done with DDT from the air and the ground.

Charges Discrimination

NEW YORK—"Considered from a paper export, as well as a pulp import, point of view, the institution of a six cents per 100 lbs., terminal handling charge on all water borne commerce by the American railroads is highly discriminatory." This is the statement of Stacey Bender, Jr., traffic manager of Elof Hansson, Inc., who represented the Association of American Woodpulp Importers and the United States Paper Exporters Council at the public hearings conducted by the Eastern and Southern Port Terminal Lines on the proposal September 15 in the ballroom of the Hamilton Hotel in Chicago. "When the ex parte 148, 162, and 166 increases were afforded the carriers," Mr. Bender told the assembled company of over 200 shippers, port, and transportation officials, "no one group could have said that they were not needed, or that they were discriminatory." "Unfortunately" he continued, "this is not true of the present proposal."

"When applied to the case of exported paper manufactured chiefly from imported woodpulp," he said further, "the proposal can be rightly termed doubly discriminatory for it would place such merchandise at a distinct disadvantage in world markets."

Section II, Part C of the proposal also came in for string criticism. Mr. Bender called this "nothing more than a bald denunciation of the carriers marine terminal facilities because, in essence, carriers were saying that private terminal operators are handling cargo better than they are themselves." "On such a cargo," Mr. Bender pointed out, "the carrier would assess charges in accordance with the subject proposal, pocketing the difference in the two terminal operating costs, which pocketed money could be called blood money, because it would be at the expense of a fast dying United States Commerce."

Chemical Pulp Availability

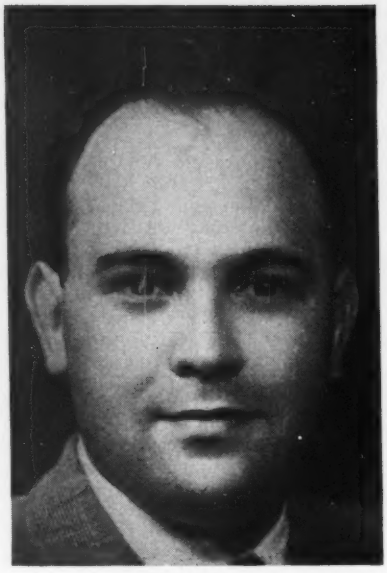
WASHINGTON—Increased supplies of chemical pulp available for export this year compared with those available in 1947, are indicated in American official advices from Helsinki, Finland, which were sent in July, but have just been made public.

Finland's chemical pulp production this year is expected to be more than 1,000,000 metric tons. Of this, about 360,000 tons will be reserved for domestic consumption, it is stated, and about 70,000 tons for compulsory exports, leaving 600,000 tons for unrestricted export, which compares with 570,000 tons last year.

Paper production is expected to amount to about 520,000 tons, of which 300,000 tons will be newsprint. Domestic newsprint consumption is anticipated at 25,000 tons and compulsory exports, 10,000 tons, which will leave 265,000 tons for unrestricted export, said the American despatch.

Other than newsprint, paper production will be distributed as follows: domestic use, 91,000 tons; compulsory exports, 13,000 tons; free export, 116,000 tons. Unrestricted export of all paper showed a slight drop for 1948, the estimated amount being 381,000 tons, compared with 394,000 in 1947.

Anticipated output of mechanical pulp and paperboard is placed at 700,000 tons, of which about 500 will be reserved for domestic consumption and compulsory export, leaving 200,000 free for general export. Free exports in 1947 amounted to 170,000 tons.



ARTHUR DONIGER

—appointed manager of the pulp and paper division of P. L. Thomas & Co., New York City . . . Mr. Doniger was formerly with Fred C. Strype, Inc.

DuPont Offers Patents

WILMINGTON, Del. — The Du Pont Co. on September 17 listed a number of its patents on the Patent Register of the U. S. Patent Office as available for licensing.

The company said 4,260 patents, which are about two-thirds of those the company owns, have been submitted. The first official listing of Du Pont patents is expected to appear in an early issue of the Patent Office Gazette.

Study of the company's patents will be continued to determine what additional listings may be made from time to time, and patents not included in the present registration are not necessarily withheld from consideration for licensing. The present list was compiled only from patents granted since January 1, 1933, as those with only a short remaining life were not considered.

Du Pont pointed out that registration marks no particular change in its policy as, over the years, the company has licensed many of its patents. It noted that registration appears to be a convenient and practical method of bringing patents to the attention of industry.

Mill Construction Abandoned

LONGVIEW, Wash. — Construction of a newsprint mill here, started recently, has been abandoned after its backer spent a reported $600,000. Majority control of the syndicate behind the project laid in the Southern California Associated Newspapers which the late Col. Ira Copley headed. The mill was expected to cost about $2,000,000, but after constructing a 60,000-yard dirt fill foundation, driving piling, building a spur railroad and an office, it was estimated that total costs would exceed $4,000,000. The mill site is adjacent to that of the Pacific Paperboard Co. While Pacific Paperboard had no financial interest in the venture, it had contracted to operate the mill and deliver up to 40,000 tons of newsprint a year to the owners. Pacific Paperboard was to acquire the new property over a 10-year period by paying out of earnings.

New Multiwall Bag Plant

BERKLEY, Calif.—The Ames Harris Neville Co., one of the oldest and largest textile bag and canvas products manufacturers on the Pacific Coast, will begin construction of a multiwall paper bag plant at 8th and Parker streets in the near future.

Estimated cost of land, building and equipment is approximately $500,000.

The property, which is approximately 90,000 square feet in area, has a nine-car spur track.

The Ames Harris Neville Co., whose general offices are at 2800 17th street, San Francisco, has bag plants in San Francisco, Los Angeles, and Portland; warehouses at Twin Falls and Idaho Falls, Idaho; and sales offices at Salt Lake City, and Phoenix.

Newsprint Giant Rolling

POWELL RIVER, B.C. — The new $2,700,000 newsprint machine of the Powell River Co., capable of eventually turning out a mile of newsprint 226 inches wide every 2½ minutes started operation on September 17. According to its builders, the machine is one of the fastest and most up-to-date in the world.

The machine started operation at a "warming up" speed of 1,200 feet per minute and was gradually stepped up as early kinks were ironed out. Eventual speed of 2,000 feet per minute is considered within the capabilities of the machine, officials said. At 2,000 feet per minute it was estimated production for one machine would be 225 tons per day.

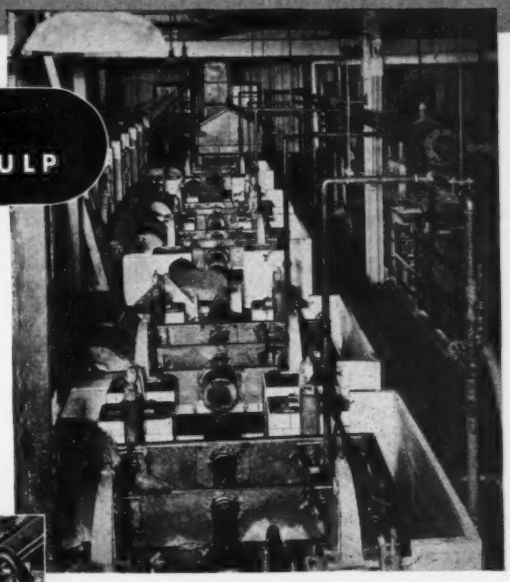
Prairie State Improvements

MIDDLETOWN, Ohio — Prairie State Paper Mills is planning improvements in its boiler plant and mechanical department. The project calls for installation of a boiler, stack, mechanical draft fan, and other facilities.

Broadway Quarters Leased

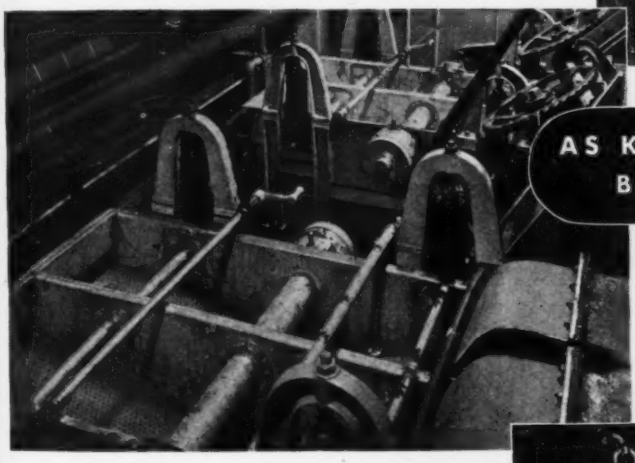
NEW YORK — Intercontinental Commercial and Paper Corp. has leased quarters at 115 Broadway.

Lots and Lots of JONSSON SCREENS *are going in:*



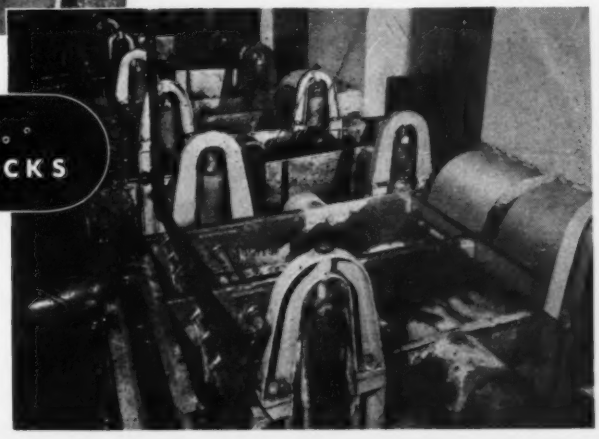
AS KNOTTERS FOR ALL KINDS OF PULP

The Jonsson Screen combines powerful, precisely controlled vibrating action with a patented, special shaped screening area that whisks the knots, chips and dirt across and out before you can say "Jack Robinson" and with virtually no loss of fibres. Big capacity, low operating cost.



AS KNOTTERS AHEAD OF BROWN STOCK WASHERS

Vastly increases washer efficiency and economy. Vacuum is maintained and maximum recovery of black liquor is effected. The foaming problem is eliminated.



FOR SCREENING OF WASTE PAPER STOCKS

Jonsson Screens are ideal for handling waste paper and de-inked stocks. They remove every unwanted element — wet strength paper, cellophane, string, paper clips, rubber bands, etc. Tailings loss is negligible, capacity is great.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Metropolitan Tappi Meeting

NEW YORK—The newly formed Metropolitan Group of the Empire State Section of Tappi held its first regular meeting of the 1948-49 season the Tuesday evening of September 14, when approximately 75 members enjoyed dinner at Fraunce's Tavern at Broad and Pearl Streets in lower Manhattan.

John Calkin, newly elected chairman of the group, introduced the guest speaker, E. W. Tinker, executive secretary of the American Pulp & Paper Ass'n., who talked on economic and management aspects and stated that contrary to current public opinion, pulp and paper was not a rags-to-riches industry, but quite stable as compared to other industries in this country. Mr. Tinker said, in part:

"The pulp and paper industry has the reputation of being a feast or famine industry. The facts do not bear out this conclusion. Without going into detailed figures, I am prepared to state and, if necessary demonstrate, that from the standpoint of financial returns, the industry has ranked above the average in its stability. The very size of the investments required, the highest per worker unit of any industry in the country, has necessitated careful planning for permanence. Chronically, highly competitive in character, returns on capital invested in the industry have never been spectacular but, on the other hand, even in periods of depression, the industry has maintained a relatively favorable position when compared with other major industries, such as steel, textiles, and lumber.

"In passing, I cannot refrain from commenting upon a recent unfortunate episode that indicates the degree of sensitivity of the industry to loose and unjustified statements. The August report of the Department of Commerce, covering the pulp and paper industry, contained a statement to the effect that the pulp and paper industry was curtailing production in order to maintain prices. This statement commanded almost national attention and was accepted as factual when the truth was that week for week the production in 1948 had exceeded that of 1947.

"I mention the above incident because of the impact it had upon an industry that employs about a half a million persons in its operations and indirectly provides employment for 624,000 in dependent industries; an industry whose freight bill alone amounts to half a billion dollars, or some seven per cent of the total for the nation; an industry that pays 300 million dollars a year in taxes and yet its welfare can be materially affected by unfavorable publicity based upon carelessly drawn conclusions.

"The fact of the matter is that the fundamental economic position of the industry is such that, based upon almost inevitable trends over the next ten or 20 years, the pulp and paper industry should be in a relatively favorable position.

"I would like to say just a word about the foreign market. The paper industry has never exported more than 2½ per cent of its production. From a world standpoint, there is a rather definite limit on the possibilities of paper production because of the lack of basic raw materials, particularly wood. It is my personal belief that as the standards of living of the world's people gradually increase, there is an enormous potential demand which, to a considerable extent, must be supplied by the domestic industry.

"Because you represent the Technical Association, I would like to speak of a field of research, basic to the welfare of the pulp and paper industry which, in my judgment, has not been adequately explored. As you well know, the pulp and paper industry is dependent upon wood fibre as a basic raw material. Various public agencies have for many years been conducting research in the field of the growth of wood and its use. However, as compared with the techniques that have been developed in the manufacture of paper, in manufacturing institutions, the results have been crude and indefinite. I can think of no better illustration of the efficacy of research sponsored by private initiative as contrasted to research on the part of public agencies, than this situation illustrates. In time it is inevitable that the production of wood will be controlled by techniques that will guarantee maximum production not only from the standpoint of volume, but from the standpoint of material adapted to most economic use. The time will come when manufacturing institutions using cellulose as a raw material will be able to draw this raw material from wood grown under controlled conditions, because the species will be adapted to the environment.

"The vast losses that we now are incurring because of damage by insects and disease, both of which are certainly controllable, with the ingenuity of man, will be overcome. In the completely integrated set-up of a paper manufacturing unit of the future, I predict that technical developments in the production of wood as a raw material will rank with the developments in the processing of this raw material. I would solicit the interest of the Technical Association in pressing for advancement along these lines."

Questions were asked by members, some of which were of considerable general interest. One questioner asked Mr. Tinker's opinion as to whether the present slump in the market for rag content paper is temporary or permanent. His answer stated that the slump was probably only temporary and was caused by the failure of the rag paper industry to regain customers who were forced, during the war, to use lower grades of paper. Another question concerning cigarette paper production elicited the opinion that the loss of foreign markets might soon be corrected by government action.

MORLAN C. GRANDBOIS

—named assistant sales manager, in the printing, publication and converting paper division, directing merchant sales of the St. Regis Sales Corp., subsidiary of the St. Regis Paper Co. . . . In taking over his new position, Mr. Grandbois leaves the advertising, publicity and sales promotion department, where he handled St. Regis advertising for all divisions and more recently devoted his entire time to the development of a merchandising program for commercial printing papers. . . . Mr. Grandbois became associated with St. Regis as a result of the acquisition by that company of the Bryant Paper Co. late in 1946.

N. J. Wage Boost

NEWARK, N. J. — The United Paperworkers of America, CIO, reported on September 16 that 900 paper board mill workers in Northern New Jersey have been granted 14½-cent-an-hour wage increases under terms of recently signed contracts.

Workers affected are employed at the Clifton Paper Board Co., Whippany Paper Board Co., and McEwan Bros., Whippany, the union statement said.

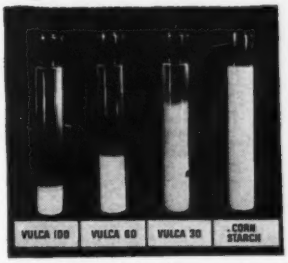
Participating in negotiations were Anthony Adamo, area director of the union, and Harold O'Cleppo, representative; Peter Cassels of Clifton Paper Board, Martin Scalley, McEwan Bros., and George Whitmore, Whippany Paper Board.

Merchant Sales Shrink

WASHINGTON—Sales of paper and paper products by limited-function wholesalers fell off to $113,000,000 in July from the June level of $127,000,000, the Bureau of Census reported September 10.

NEW! 'VULCANIZED' STARCH OFFERS YOU...

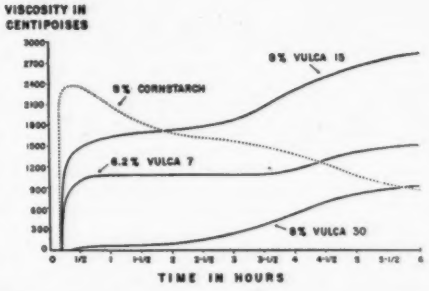
...CONTROLLED SWELLING



VULCA® starches are ether derivatives of ungelatinized starch. They are graded according to their resistance to swelling in boiling water or cooking in water. The degree to which individual VULCA granules expand depends on the grade used, but in all cases they show greater toughness and resistance to rupture than all other starches. The settling test illustrates the comparative swelling of three grades of VULCA starches — VULCA 100 (completely non-swelling) and the intermediate grades 60 and 30 — as compared to standard corn starch after cooking for 20 minutes. Each graduate contains a 5% starch in water mixture. Note that the difference in degree of swelling of the three grades of VULCA starches is indicated by the volume of settled starch, while the corn starch has been completely dispersed, resulting in gelled paste. In as little as three parts of boiling water VULCA 100 will give a fluid suspension, the individual granules swelling approximately only 5 microns. Since VULCA is available in any desired grade, viscosity of a mixture using these starches as a base is subject to rigid control.

...CONTROLLED VISCOSITY

VULCA pastes maintain their viscosity after prolonged cooking, at 92°C, as shown by continuous viscosity curves. Note that while corn starch soon attains its maximum or peak viscosity and then begins to decrease in viscosity, the VULCA viscosity curves do not exhibit peaks and do not show a loss of viscosity on prolonged cooking. VULCA starches are resistant to degradation by acids and amylolytic enzymes. Under a given set of drastic gelatinizing conditions where corn starch paste has already passed its peak viscosity and is breaking down, VULCA starch of the proper grade would just be reaching *its* peak viscosity. The amazing inertness of VULCA 100 is aptly demonstrated by . . . its resistance to those agents that completely gelatinize starch . . . its stability during autoclaving and pressure cooking . . . and its capacity for steam sterilization without any appreciable change in its powdery appearance.



A FEW INDUSTRIAL APPLICATIONS

FOOD: As a thickener for canned foods. With VULCA, less 'starch' is used to achieve any given thickening effect, resulting in improved appearance, consistency and reduction of 'starchy' appearance and flavor. **COSMETIC:** As a base for powders, rub-off and massage creams. VULCA is non-irritating. In addition, it is readily absorbed by the body when introduced into open cuts or abrasions. **MISC:** As a thickener of the alkaline electrolyte solutions in storage batteries where VULCA starches offer more stable viscosities. Also for rubber dusting and paper coating.

Further information and research samples can be obtained from National Starch Products, Research and Development Laboratories, 270 Madison Avenue, New York 16, N. Y.

National STARCH PRODUCTS

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

NPTA Chicago Meeting

NEW YORK — The National Paper Trade Ass'n. will hold its semi-annual fall convention at Hotel Stevens, Chicago, October 28-30.

The advance meeting of the executive committee will be held the afternoon of October 27, while the commodity committees will meet in the morning of October 28, with the meeting of the board of directors that evening.

The usual big opening session to which manufacturers and guests are invited will be held the afternoon of October 28 in the North Ball Room of the hotel. "The topic to be discussed is the possible effect on manufacturers and distributors of the Supreme Court Decision in the Cement Case — the so-called Basing Point Decision, which some consider to point inevitably to a F.O.B. Mill basis of sale," Arthur H. Chamberlain, executive secretary, states. "While his attendance is not assured, we hope and expect to have as a speaker Senator Capehart of Indiana, chairman of the Senate Sub-Committee on Trade Policies, which has been directed to inquire into the effect of this decision on business generally," Mr. Chamberlain added. "The subject will also be discussed from our industry viewpoint by Morton E. Graham, secretary and counsel of the Hammermill Paper Co. Comments on industry affairs may be expected from E. W. Tinker, executive secretary of the American Paper & Pulp Ass'n."

The meetings of the Fine and Wrapping Paper Divisions will be held Friday morning and afternoon respectively with the divisional vice-presidents presiding.

The program of the Fine Paper session will be focused in part on developments affecting the use of paper in the graphic arts, including the showing of a voice film on offset equipment presented by the Miehle Printing Press & Mfg. Co., supplemented by technical speakers on letterpress and offset production. M. C. Dodrow, secretary of the Writing Paper Mfr's. Ass'n., is expected to discuss the outlook in the fine paper field.

In the Wrapping Paper Division, topics will include the hiring and training of salesmen; pre-wrapping of fruits, vegetables and meats in consumer service; and ways and means of holding the distribution of resale items in paper merchant channels.

The final session of the convention and semi-annual meeting of the Association, with official reports, etc., will be held the morning of October 30.

Titanium Metal Pilot Plant

WILMINGTON, Del. — The Du Pont Co. told *Paper Trade Journal* on September 13 that it had begun the small-scale manufacture of titanium metal in a pilot unit of 100 pounds daily capacity at the Newport, Del., plant of the pigments department. This, so far as the company knows, is the first time ductile titanium metal has been produced for commercial exploration. The U. S. Bureau of Mines has been producing the metal for research purposes.

Mutual Opens Atlanta Office

ATLANTA—The Mutual Boiler-Insurance Co., of Boston has opened a sales and inspection office at 716 Mortgage Guarantee building, 141 Carnegie Way N.W., under the direction of E. L. Gates, Jr., special representative. Inspections are under the direction of W. C. Lange.

Cease and Desist Order

(Continued from page 7)

formula by which the current or future prices of any respondent manufacturer may be ascertained by a competitor for the purpose or with the effect of fixing prices.

Exchanging information concerning prices for "tailor-made" or "special made" tickets which has the tendency or capacity of enabling the different respondent manufacturers to quote identical prices for such tickets.

Exchanging information concerning sales when the identity of the manufacturer, seller or purchaser is disclosed or may be determined through such information and which has the tendency or capacity of enabling any of the respondent manufacturers to quote tickets at the same price as any of the other respondent manufacturers.

Directly or indirectly participating in any agreement to establish or maintain any plan for the purpose of informing any manufacturer as to the price, terms or conditions at which tickets are to be sold.

Formulating any code of symbols which has the capacity of enabling any of the respondents to identify the tickets produced and sold by any respondent manufacturer for the purpose or with the effect of fixing prices.

Adopting uniform standards as to style, size, or color of tickets or the weight and quality of the paper or cardboard out of which tickets are made with the purpose or effect of establishing uniform prices.

Holding or participating in any meeting at which proposed or future prices are discussed or at which any other action is taken for the purpose or with the effect of eliminating competition in price between and among the respondent manufacturers.

Gooch & Co., and the six associations, their officers and employes, are forbidden to knowingly advise, assist or cooperate with the other respondents in any of the practices prohibited by the order.

Trade associations named in the order are Ass'n. of Coupon Book Mfrs., Amusement Ticket Mfrs., Ass'n., Restaurant Check Mfrs. Ass'n., Clothing Ticket Mfrs. Ass'n, Transit Ticket Mfrs. Ass'n. and Licensed Railroad Ticket Mfrs. Ass'n., all of 369 Lexington Ave., New York. The order is also directed against Gooch & Co., of the same address, a copartnership composed of Joseph Gooch, Jr., and Edith A. Gooch.

Manufacturers named in the order included: Globe Ticket Co. and Allen-Lane & Scott, both of Philadelphia; International Ticket Co., Newark, Keller Printing Co., Arcus-Simplex Ticket Co., Inc., Elliott Ticket Co., Whitney Duplicating Check Co., New York; Poole Brothers, Inc., Ansell-Simplex Ticket Co., Inc., Arcus Ticket Co., Inc., Rand McNally & Co., Stromberg Allen & Co., and Hedstrom-Barry Co., Chicago; Toledo Ticket Co., Toledo; McGill-Warner Co., and National Checking Co., St. Paul; Hancock Brothers, San Francisco; Dillingham Printing Co., Inc., Los Angeles; Specialty Printing Co., Rochester, N. Y.; National Ticket Co., Shamokin, Pa.; Southwest Tablet Manufacturing Co., Dallas; Premier-Southern Ticket Co., Inc., and the A. H. Pugh Printing Co., both of Cincinnati; Universal Checking System, Inc., West New York, N. J.; Gibbs-Inman Co., Louisville, Ky.; Rand Avery-Gordon Taylor, Inc., Boston; Southern Coupon Co., South Birmingham, Ala.; Baltimore Ticket Printing & Envelope Co., Baltimore; Frank McCaffrey, trading as Frank McCaffrey's Acme Press, Seattle; Buxton & Skinner Printing & Stationery Co., and Con. P. Curran Printing Co., St. Louis; Allison Coupon Co., Indianapolis; and Weldon, Williams & Lick, Inc., Fort Smith.

The findings noted that Weldon, Williams & Lick, Inc., was not a member of any of the associations but said it cooperated in the conspiracy.

The complaint was dismissed as to Dasco-Lockstub Corp., New York, on the basis of information that the principal owner was deceased and the company no longer in operation. Dismissal was also ordered as to American Ticket Corp., Chicago, and Jack's Letter Service, Inc., Milwaukee, nonmember companies who were alleged to have actively cooperated in the collusive practices. Findings indicated that Jack's Letter Service was not engaged in the manufacture of tickets. The Commission made no findings in the case of the American Ticket Corp., since the record presented no basis for determining whether the company had participated in the unlawful conspiracy. The findings also indicated that there is no such ticket manufacturer as the National Theatre Supply Co.

Findings of the Commission were based on answers, admitting, with certain qualifications, all of the material allegations of the complaint and waiving all hearings and other procedure, filed by all the respondents except American Ticket Corp., Jack's Letter Service, Inc., Dasco-Lockstub Corp., and National Theatre Supply Company and answer, denying the allegations of the complaint, filed by American Ticket Corporation and Jack's Letter Service, Inc.

All the Commissioners participated in the decision.

ROBERT W. HOWARD

—appointed by Moore & White, Philadelphia, manufacturer of paper-making machinery, as sales engineer for the tri-state area of Pennsylvania, New York and New Jersey.

A POWERFUL COLLECTOR OF MOISTURE!

CORPOLIN®

HYGROSCOPIC AND PLASTICIZING AGENT

FOR PLASTICIZING AND FLAME-PROOFING PAPER

WHAT IT IS

CORPOLIN is a heavy non-volatile liquid —clear, colorless, odorless, free-flowing. Resembles glycerine in feel and appearance.

A highly concentrated solution of organic compounds in water, containing 70% solids.

NON-TOXIC; NON-FLAMMABLE; does not solidify, even in extreme cold.

WHAT IT DOES

Highly effective for softening paper. Also imparts flame-resistance, and a cloth-like feel. Replaces glycerine at less than ½ the cost.

Introduces valuable economies as a humectant. Plasticizes papers for draperies, bags, waxed and glassine containers, etc.

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HEYDEN CHEMICAL CORPORATION

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HEYDEN CHEMICAL CORPORATION — THE AKTIVIN DIVISION — NEW YORK

Kalamazoo River Pollution Cut

KALAMAZOO—Departure of Philip F. Morgan on September 15 for Iowa City, Iowa, served to point the fact that the long fight to free the Kalamazoo River of its industrial and sewage pollution has passed its first milestone.

Mr. Morgan came to Kalamazoo on September 1, 1945, as a representative of the Mellon Institution of Industrial Research and the National Stream Improvement Council.

His assignment was to find a means of treating papermill de-inking waste to prevent robbing river water of its oxygen. Now work of selecting a site for a commercial type plant for disposal of papermill de-inking wastes is in progress, the development that coincides with the departure of the man whose research made this much progress in the decades old problem possible.

Six Mills Collaborate

The work resulted from collaboration of six book paper mills in the area that have a de-inking waste problem: the Kalamazoo Paper Co., Rex Paper Co., Allied Paper Mills, St. Regis Paper Co., Michigan Paper Co., and Watervliet Paper Co.

Mr. Morgan's next assignment is in the University of Iowa at Iowa City, where he has been named associate professor of sanitary engineering.

During his three years here Mr. Morgan worked on his problem in the laboratories at Kalamazoo College, and had assistance from research chemists at Michigan State College. Before coming to the city for his direct attack on the de-inking wastes problem he had the benefit of elimination research by the Mellon Institution. This work showed what would not be effective and in a way channeled the studies Morgan initiated here.

It was found, Mr. Morgan finally reported, that the organic material present in the de-inking waste solution could be assimilated by a type of bacteria that has no harmful effect on the river's oxygen content. This discovery was exploited in the pilot plant work done at the Michigan Paper Co. where a 60,000-gallon-per-day treatment establishment was set up. The commercial plant to be built along the lines developed at the Plainwell mill will be capable of handling 500,000 gallons daily.

Work To Be Continued

Mr. Morgan has pointed out that there still remains the problem of disposing of the mills' primary sludge, the settleable fraction of the wastes settled out in tanks previous to the biological treatment. The lagoon treatment is now being considered as a possible solution of this section of the whole pollution problem.

A successor to Mr. Morgan will be named shortly.

Excessive Tree Cutting Unwise

Farmers and other forest land owners who think it wise to cut all their salable timber now, in the belief that stumpage prices are higher than they ever will be again, should consider that the long-time trend of these prices has been definitely upward, and that since 1920 log prices have consistently stayed at higher levels than the average price of all farm products, the Forest Service in the U. S. Department of Agriculture advised on September 8.

The advice was issued because reports from foresters in many parts of the country, particularly those engaged in cooperative work with forest land owners, indicate that because of today's record prices many of these owners are questioning the advisability of leaving any trees having a cash value as growing stock to provide for future crops and income.

In the view of the Forest Service, present high stumpage and log prices make this a good time to sell mature timber on any tract, and also offer a fine opportunity to dispose of low quality and deformed trees that have little or no value in times of less urgent demand but removal of which is beneficial to the woodland. Young thrifty trees, the Forest Service advised, should still be reserved to form the basis of future growth, cuttings and sales.

Admitting the difficulty of accurately forecasting economic conditions decades or even years in advance, the Forest Service offered the record of past stumpage and log prices as giving a reasonable indication of what may be expected of these prices in the future.

The price-trend studies cited by the Forest Service were the work of Henry B. Steer, forest economist with the agency, and were based on sales of nearly 600 billion board feet. Limited to the country east of the Great Plains, the studies showed that though the actual prices paid for standing timber increased in periods of inflation and dropped during periods of deflation and economic depression, the adjusted price trend rose steadily from 1900 to 1945, the last year for which country-wide records are available. However, reports from all available sources show that 1946 and 1947 stumpage prices were higher than in 1945 and that the upward trend continued in those years.

Referring to the fact that log prices have held consistently above the average price of all farm products since 1920, the record showed that log prices on the average did not descend during the 1931-34 depression to the pre-war (1910-1914) level while the average price of al lfarm products fell below that level during the depression years.

AN INVITATION
to
Technical Writers

Paper Trade Journal in the Industrial Development Section, makes space available for discussion of administrative and operating problems. Space is also available for presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and interrelated industries will also be included.

An invitation is cordially extended to all who are qualified to discuss these subjects.

Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.

Terminal Facilities Considered

SPRINGFIELD, Mass. — Paper manufacturers along the Connecticut River were told on September 4 that information relative to the willingness of adjacent cities and towns to participate in the construction of suitable terminal facilities, in the event the Army Engineers recommend making the Connecticut River navigable above Hartford, Conn., will be sought by Mayor Daniel B. Brunton.

Paper manufacturers long have favored navigation on the river, because it would reduce shipping costs and make it easier to move raw materials into the area, and to ship finished products to market.

Merrill Meeting Oct. 10

MERRILL, Wis.—Arrangements have been completed for the Tri-State Convention of papermakers, sulphite workers and converters to be held here October 10 at the high school. Delegates from Michigan, Minnesota and Wisconsin will attend this convention.

Main speaker will be DeLoss Walker, who is being brought to Merrill through the courtesy of D. B. Smith of the Ward Paper Co.

Norwegian Caustic Soda Plant

WASHINGTON — The caustic soda plant being erected by Den Norske Cellullfabrikken at Sarpborg, Norway, is expected to begin operations about January, 1949, it is now reported. Capacity is projected at 10,000 tons annually, with the entire output to be absorbed in rayon manufacture, according to the report.

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No calender can be better than the Rolls in it.
B. F. PERKINS & SON, Inc.
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LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

Memorial Forest Dedicated

RHINELANDER, Wis.—Oneida County Memorial Forest, largest in the nation, officially dedicated on Labor Day, September 6, comprises 11,000 acres and is located 12 miles east of Rhinelander on Highway 8.

Folke Becker, president of Trees for Tomorrow, Inc., and president of the Rhinelander Paper Co., gave the principal address.

Mr. Becker emphasized the significance of the newly established memorial from a forestry standpoint. He declared that "We must evolve a wise and forward looking program for the full development of our forest resources. To withhold or reserve them is not enough. We must plan for their intelligent use. This planning requires a new attitude and the ability for people to work together in a great cooperative venture."

"By your presence here today," Mr. Becker told the audience of 1,000, "you are paying tribute to the memory of those boys who did not return, as these forests will pay tribute to them down through the ages to come."

Charles Smith, chairman of the State Conservation Commission, said that the forest, in which 10,000 trees were planted last spring, would eventually grow into an asset of lasting value for the people of the community.

Marvin Beltz, chairman of the Oneida County Memorial Forest Committee, explained the land use program which has been developed in that county. He pointed to the large areas devoted to state, industrial and federal forests as well as a number of demonstration tracts such as school forests, Boy Scout forests and experimental forests.

Milton Resumes Sales Forums

NEW YORK—The Milton Sales Forum conducted by the Milton Paper Company, Inc., was reconvened on September 17, at the Masonic Club to start its second year of educational sessions for Milton salesmen. The customer who "looked" at the paper industry on that date was Ira Frank, president of the Correct Printing Co., who is a former president of the Master Printers Section of the New York Employing Printers Ass'n., and former treasurer and present chairman of the Paper Trade Relations Committee, of the NYEPA.

Montana Timber Survey

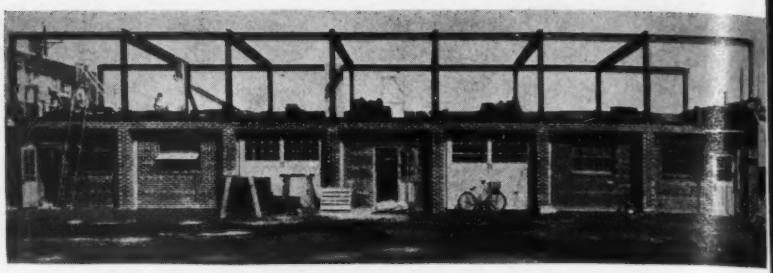
LEWISTOWN, Mont. — A wood pulp industry in Central Montana's Little Belt mountains seems to be a certainty.

The U. S. Forest Service, completing a survey, estimates that about 250,000 cords of wood pulp will be sold on bids.

A plan of management is being worked out in conjunction with the survey, according to B. A. Goodman, district Ranger.

Timberland totaling 11,520 acres along the south fork of the Judith River is being studied by a cruising party led by Dan Massing, assistant district forest Ranger. The four-man party went into the woods on August 16 and was scheduled to complete its work about September 22.

Boundaries of the half-township being plotted are: south slope of the Musselshell divide on the north, south fork of the Judite on the south, Bluff creek on the east, and Hoover mountain on the west.



UNITED CLAY MINES LABORATORY

Research and technical laboratory being erected at the United Clay Mines Corp., main offices on Oakland street in Trenton, N. J. . . The second story to be devoted to clay research under the supervision of G. W. Phelps and his assistants, T. J. Smith and J. Goodballet. . . Clay testing machinery and laboratory control apparatus, including a pilot plant for ceramic work; dry mixing equipment, de-airing pug mill, filter press, magnetic separator, dry press, etc., will be installed, as well as specialized equipment used in fundamental clay research.

Cancelling Out Fires

WASHINGTON—To mark the first-time use of mail-cancelling dies in the Washington and other postoffices in 37 major cities throughout the country in the interest of the nation-wide forest fire prevention campaign, now underway, more than 700 conservationists, philatelists and guests attended a brief ceremony in the local post office on September 15.

Speakers emphasized the importance of preserving our forests from fire and other wasteful enemies as a vital measure which, they said, must be pressed to the utmost if America is to survive as a powerful nation.

Use by the United States Post Office Department on a national scale of the slogan "Remember—only you can prevent forest fires," was praised as one of the most important new means of bringing this conservation plea home to the people of the nation which has been taken in many years.

Among those on the program were R. E. McArdle, assistant chief of the Forest Service; Chapin Collins, director of American Forest Products Industries, Inc.; and S. L. Frost, director of the American Forestry Association.

Seven Clinton Men Upped

CLINTON, Iowa—Seven appointments designed to streamline the sales operations of Clinton Industries, Inc., manufacturer of products from corn, were disclosed on September 10 by R. E. Clizbe, president and general manager.

Plans for expansion of sales activities, including enlargement of the sales service department, follow the appointment of Carl Whiteman as general sales manager last February, Mr. Clizbe pointed out.

The seven promoted in the bulk sales department have been with Clinton Industries for many years. Heading the list is H. A. Bendixen, advanced to the newly created post of bulk sales manager of primary products. Edward C. Alderson moves up from assistant manager, corn syrup and sugar sales, to manager of that division. E. D. Cottral is advanced to assistant manager, corn syrup and sugar sales. Elmer H. Knoernschild becomes assistant manager of crude sugar and lactic acid sales. A. C. Junge, who had been assistant manager, bulk starch sales, becomes manager of bulk starch and laundry starch sales. Ray E. Mikkelsen becomes assistant manager of bulk starch and laundry sales. Others advanced are Geo. E. Carson and Earl W. Myers.

Monsanto Revises Line-Up

SPRINGFIELD, Mass.—Division of the Monsanto Chemical Co. industrial and surface coating resins sales department into two groups was disclosed here on September 4 by James R. Turnbull, general manager of sales for Monsanto's plastics division.

One of the new sales groups, the adhesives and industrial resins department, will be headed by E. Everett Decker, formerly district manager at Lockport, N.Y., for Monsanto's western division. Assisting him will be Edmund S. Bauer, Jr., formerly assistant sales manager of the industrial and surface coating resins sales department. The products of the department will include Resinox and Resimene resins, other than molding materials, and plywood adhesives, bonding resins and glues.

Albert W. Dunning will continue as sales manager of the surface coating resins department, assisted by William C. Davis, until now a member of the sales development department. In addition to surface coating resins, the department will be responsible for the sale of styrene monomer produced at the company's rebuilt Texas City, Tex., plant, and for formaldehyde, to be produced at a new plant in Springfield.

TRI-CLAD

REG. U.S. PAT. OFF.

SPEED SYNCHRONOUS MOTORS AND GENERATORS

These new synchronous motors and generators bring you the famous TRI-CLAD improvements:

Extra Protection Features!—against physical damage—against electrical breakdown—against operating wear and tear.

New Styling!—smooth, rounded contours—baffled ventilating louvers—smooth-corners on exciters and conduit boxes.

Following General Electric design leadership, the new line of Tri-Clad synchronous motors and generators give you the same design features that made Tri-Clad motors so successful in more than a million and a half industrial applications.

Tri-Clad construction gives you protection where it counts. Frames and end shields with no openings above the center line—give protection against dripping liquids, falling objects, and accidental blows.

You get protection against electrical breakdown in normal operations. Proved insulating materials of the highest quality are used throughout. Small sizes (through frame 945) use Formex* wire for low voltage windings. Larger size coils are form wound and molded accurately to slot size.

Bearings are completely enclosed in cast iron with close running fits for long life with minimum maintenance. Deep oil reservoirs insure adequate lubrication with clean, cool oil.

You can get synchronous motors in the new Tri-Clad design in ratings from 20 hp to 1000 hp at 60 cycles, speeds from 514 to 1800 rpm. Synchronous generators are available from 12½ to 1250 kva. Direct connected exciters are available for any rating.

About ten years ago, the Tri-Clad design was introduced to combine the important features demanded by industry. Since then, it has been further improved with additional refinements—all of which have been incorporated in this new line of synchronous motors and generators.

For more information on how you will benefit from Tri-Clad construction in your synchronous motor and generator installations, contact your nearest G-E sales engineer. For detailed construction features, write for GEA-5113 (Motors) or GEA-5125 (Generators). *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

Typical TRI-CLAD High Speed Generator with direct-connected exciter.

*Reg. U. S. Pat. Off.

GENERAL ELECTRIC

770-1

Capitalization Increased

CARTHAGE, N. Y.—Carthage Paper Makers, Inc., of which Charles S. Hirschey is president, has increased its capitalization from $400,000 to $1,000,000. The company was incorporated Oct. 24, 1932, at a capitalization of $400,000 consisting of 2,000 shares of $25 common stock and 3,500 shares of $100 preferred. In the future the company will have 7,000 shares of $100 preferred stock and 12,000 shares of $25 common. The former shares will be inclosed.

Reynolds Calif. Foil Plant

VERNON, Calif.—The Reynolds Metal Co., will establish a $500,000 plant at 3700 Fruitland road, for laminating metal foil.

William K. Allen Ferguson, the company's Pacific Coast division manager, states that the factory, first of its kind on the coast, will employ 100 persons in the 22,000-square-foot building on the 1½-acre tract acquired here. Foil paper will be laminated for labels and food-packaging material.

NYU Packaging Course

NEW YORK—A 15-week course in Package Development and Production will be offered commencing September 28 by New York University's division of general education, Dean Paul A. McGhee told *Paper Trade Journal* on September 10.

Henry J. Howlett, secretary of the American Management Ass'n., will direct it and will introduce guest speakers in each phase of the packaging industry.

Paradis Development Started

TORONTO—Paradis & Sons, Ltd., has started development work to produce pulpwood, building lumber, railroad ties, etc., on a northwestern Quebec property bought recently by Alfred H. Paradis of the firm from Canadian Pacific Railway at about $750,000. The tract comprises about 150 square miles of freehold timber lands on the Ottawa River watershed in Chabert, Beraud and Landanet townships.

Mill On Tour Itinerary

BOSTON — The Second Annual Research Tour conducted under the auspices of the Research Committee of the New England Council, October 13-15, will include a visit to the Strathmore Paper Co., Springfield, Mass. This all-expense tour, by de luxe type motor buses, will be limited to 75 persons. Invitations will be extended shortly to New England industrialists and commercial bankers.

Connecticut Water Wrangle

HOLYOKE, Mass. — As local paper manufacturers watched to see if their indentured power rights would be retained, the Federal Power Commission in Washington, D. C., advised the Board of Selectmen in nearby Hadley on September 4 that the possibility of re-developing the Holyoke dam project was under consideration.

The elevation of the reservoir water surface was likewise being studied, but no definite conclusions had been reached.

"Prior to the adoption of any plan for the redevelopment of the project, interested parties will be given an opportunity to be heard on the matter at a public hearing," the commission stated.

Howard C. Rice, publisher of the *Brattleboro (Vt.) Reformer* and long a power in Vermont politics, has served notice on promoters of a Connecticut Valley Authority that Vermont lands will not be flooded without a stubborn fight.

Carter, Rice & Co., Corp.

BOSTON — The Bulkley, Dunton & Co., division of the Carter, Rice & Co., Corp., at Springfield, Mass., has completed its removal to its new warehouse at 53 Wilbraham road.

Carter, Rice & Co., Corp., Boston, had its sales organization together the evening of September 15 to have the Strathmore line and the latest Strathmore advertising and promotion presented to them.

MacMillan Mill Begun

NANAIMO, B. C.—Clearing and foundation work on the new $12,000,000 pulp mill of the H. R. MacMillan Export Co., Ltd., is now underway, and construction is expected to start soon. The site is on Northumberland Street, a little more than four miles from this city. The mill, which is expected to be completed by 1950, will use chips and waste wood products to make pulp.

Duncan Joins Frontenac Co.

DEXTER, N. Y.—Charles E. Duncan has accepted a position with the Frontenac Paper Corp., to handle the product of that mill's one machine. He formerly represented the Dexter Sulphite Pulp & Paper Co. The new company will make most of the lines made by the old company, including Ajax butcher's paper.

Kiefer-Gradle Nuptials

NEW YORK — Edgar Weber Kiefer and Mrs. Walter Gradle were married here on September 15. Mr. Kiefer is chairman of the board of the Port Huron Sulphite & Paper Co., Port Huron, Mich. Mr. and Mrs. Kiefer will be at home after October 1, at 2614 Military street, Port Huron.

Schneider Leaves Chippewa

CHICAGO—John Schneider, secretary of the Chippewa Paper Products Co., resigned that post recently to accept an executive position in the sales department of an automotive equipment maker.

Sensenbrenner Retires

MILWAUKEE—F. James Sensenbrenner, vice-president of the American Paper Co., retired on September 2.

Mielkes Touring Europe

NEW YORK—Off for Great Britain and the Continent aboard the Queen Mary is O. W. Mielke, general manager of Blake, Moffitt & Towne, accompanied by his wife, Mr. and Mrs. Mielke will visit Holland, Belgium, Switzerland, Italy, France, England and Scotland, travelling by private automobile. They will return to New York on the Mauretania late in October.

Bay State Incorporates

BOSTON—The Bay State Bag Corp., 204 Third street, Chelsea, Mass., has been incorporated to buy, sell, deal in burlap, cotton and any other kind of bags, etc., with capital stock of 100 common shares of no par value. Herbert Gordon is president; Norman Cohen, treasurer, and Celia C. Cohen, clerk.

Silker In TFS Post

COLLEGE STATION, Tex. — Theodore H. Silker, associate forester silviculturist with the Tennessee Valley Authority at Norris, Tenn., for the past seven years, joined the Texas Forest Service as research technician at the E. O. Siecke State Forest, Kirbyville, on Sept. 10.

Patterson Incorporates

ARLINGTON, Mass.—William S. Patterson Co., Inc., has been incorporated to manufacture, buy, sell, bagging, boxes, paper, etc., with capital stock of 1000 common shares, par value, $100. William S. Patterson is president and treasurer, and Susan S. Patterson, clerk.

R. & K. Co. Incorporated

WORCESTER, Mass. — The R. & K. Paper Co., Inc., 81 Water street, has been incorporated to manufacture and deal in paper of all kinds, etc., with a capital stock of 600 npv common shares. Chone Kessler is president; Jacob Rassen, treasurer; and Goldie Rassen, clerk.

Hinsdale Agreement Reached

HINSDALE, N. H.—Management of the Hinsdale Paper Mfg. Co., and representatives of Ashuelot Valley Local 483, Papermakers' Union, agreed on wage increases of ten cents an hour, it was reported on September 7.

Thousands Enter Name Contest

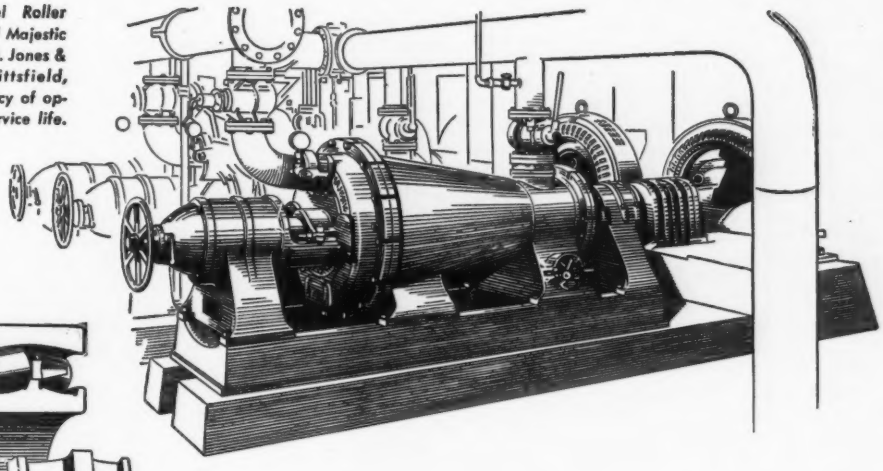
RHINELANDER, Wis.—From 5,000 to 6,000 persons have entered the Rhinelander Paper Co., contest in an attempt to submit the winning name for the No. 7 paper machine which began productive operation on August 26.

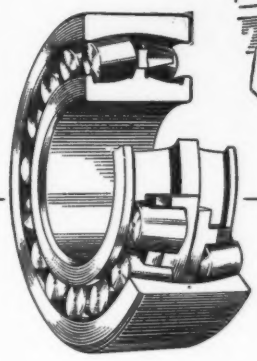
E-Z Leases Quarters

JERSEY CITY, N. J.—The E-Z Container Corp., manufacturer of corrugated shipping containers, has leased the ground floor of the building at 20-40 New York avenue.

Uniform Stock Comes From Majestic Jordans Equipped with Torrington Spherical Roller Bearings

Torrington Spherical Roller Bearings on shafts of Majestic Jordans built by E. D. Jones & Sons Company, Pittsfield, Mass., assure accuracy of operation and long service life.





. . . accurate alignment and high capacity of these self-aligning units insure precision operation and long service life in Jordan engines.

E. D. Jones & Sons Company uses Torrington Spherical Roller Bearings on Jordan shafts to carry loads met in preparing fine paper stock.

These self-aligning bearings help maintain precision of adjustment and operation. The high radial capacity provides rigid support for the shaft, yet the bearings are free to adjust to deflection or misalignment. Thrust from both directions is safely handled, fixing the shaft against end play.

Maintenance can be held to a minimum. Housings and bearings form self-contained units that remain on the shaft for the life of the Jordan. They need not be removed when the plug is withdrawn for chipping or refilling.

Long service life, precision operation, easy mounting and dismounting are among the many advantages you can secure on beaters, chippers, paper dryers and calenders by using Torrington Spherical Roller Bearings for new equipment or replacements. Our engineers will be glad to help you with any bearing requirements. Contact the nearest Torrington office.

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District Offices and Distributors in Principal Cities

TORRINGTON SPHERICAL ROLLER **BEARINGS**

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • NEEDLE • BALL • NEEDLE ROLLERS

TRENDS

Office of the PAPER TRADE JOURNAL
Wednesday, September 22, 1948.

Now that fourth quarter prices of market pulp are fairly well settled at lowered prices for Scandinavian product and at sustained levels for domestic and Canadian, concern is being expressed that paper merchants and the consuming public are being led to expect lowered prices for paper. Hints that prices will rise no further but rather be depressed because of reduced prices of Scandinavian pulp have already appeared in market surveys. Such conclusions can but indicate lack of knowledge of operating conditions that have confronted market pulp consumers since the re-advent of a buyers' market and competitive selling.

Some of these problems were set down quite plainly in Industry Reports of the U. S. Department of Commerce over a period of months. Writing in the July report, W. L. Neubrech says, "Nonintegrated mills in the northeast region as usual have not shared in the capacity production of their competitors in the integrated paper and board field. Inadequate supplies of purchase pulp at prices that permit competition continue to present the chief problem of those mills lacking pulp converting facilities. In the paper producing region of southern Ohio, too, mills are experiencing difficulty not only in obtaining sufficient market pulp but also in securing the higher grades of waste paper which they have been employing as a pulp substitute. The Lake States area, although reporting a continuing tightness in supplies of market bleached sulphate, indicates an easing in other grades. Despite this apparently favorable note, some nonintegrated mills of the Lake States district are restricting weekly operations to five days; and a few mills—with combined monthly production capacity of around 12,000 tons of paper and board—are expected to be closed down, high production costs having placed them in a non-competitive position. A large portion of those costs would of course be represented by wood pulp. The task of selling in competition that portion of their production which utilizes the higher-priced European pulps is daily becoming a problem more difficult of solution on the part of the nonintegrated mills. . . . Trade reports indicate that it will be more and more difficult for producers in the U. S. and Canada to maintain present price levels under pressure of mounting costs of labor, raw materials, transportation and other items that determine sales levels. . . . There is a reasonable assumption that many of the nonintegrated mills which have curtailed production as a direct result of high European pulp prices would restore most of that production if these prices were subject to downward adjustment."

TRENDS, August 12 issue, reported that "Limited operation is being forced upon many writing paper producers who are 'getting the squeeze' between high-priced pulps, rising costs of labor and chemicals and a competitive market with integrated mills. At least one company operated at a loss during the fiscal year just ended and several others reported diminished profits. Rises in sulphite prices were recently effected by integrated mills which were able to cover some of their rising labor and other production costs in the margin which existed between their prices and those of non-integrated competition. The differential which remains may be widened should the non-integrated mills be forced to pass along a portion of their increased costs."

It is expected that revised pulp prices will permit partially and non-integrated mills to sustain production on a more competitive basis. No great increase in Scandinavian imports of wood pulp will immediately show up, partly because wood pulp inventories at these mills increased during the summer as a result of curtailed production, also that current reports will represent shipments made at third-quarter high prices.

Manufactures

Supplies of kraft wrapping, tissues, toilet tissue and towels are still tight. Prices generaly are steady although rumor indicates a towel rise as immanent. . . . Recent increases in prices of bag paper are being held responsible for a two cents per barrel boost in the price of cement, packed four bags to the barrel. . . . Costa Rica reports that the manufacture of shopping bags is being hampered by difficulties in getting kraft paper from the U. S. and other foreign markets. . . . Quality of paper improves. Reports come in of poorer stocks being worked off along with quantities of better quality.

Twines

With prices of raw fibres advancing heavily and the supply uncertain, prices of all twines are again increased. Orders are being accepted on the basis of invoicing at price effective when shipment is made.

Waste Paper

The "deplorable" conditions of the waste paper industry are being considered at a meeting of the National Waste Paper Committee during a convention of the National Association of Waste Material Dealers, Inc., at Mackinac Island, Mich. Among the proposals to be considered are: readjustment of labor in the waste paper industry, reduced railroad and ocean freight rates on waste paper, ECA aid for waste paper exports from the U. S., and development of new uses for waste paper.

Eastern mills received their full requirements of *mixed* during the week ended September 11, and bought more than needed of the *container* and *high grades*, reports Director Colley S. Baker of ECC. Dealers supplied them with 96 percent of their requirements of *news*. Since the beginning of August, collections have met mill requirements in all grades except *news*, mill inventories of which have dropped something like 10 percent in that time. Board mill waste paper inventories are said to be in similar position to those of last Fall and 1946's. "This would indicate," Mr. Baker believes "that if production schedules are increased for autumn business there must be an increased supply of waste paper available for immediate consumption, for few if any mills would be willing to reduce inventories further at this time of the year."

Cottons

New cuttings and old rags continue to reflect limited demand from mills, also tight supply. Two factors receiving conjecture are a possible decline in textile prices as a result of the record cotton crop in view of government support, and increased operations in rag-content paper mills. One opinion in the latter direction was that the nation's economy is ripe to regain the business paper market for rag-content papers, a market lost to sulphites during war-shortages of rag contents.

Production Figures

July paper and board production was reported at 1,688,073 tons, nearly 150,000 tons below the June figure, according to the Bureau of Census, Dept. of Commerce. Paperboard decrease was slightly greater than paper. Building board output at 99.0 percent of production base showed a substantial increase over June, due in part to new capacity. Over-all paper and board production represented 83.4 per cent of current production base, three points below the base percentage in July, 1947.

Indexes

Index of general business activity for the week ended September 11 dipped to 145.6 from 147.4 in the preceding week, compared with 141.7 in the corresponding week of 1947.

Index of paperboard production declined to 166.1 from 170.0 in the preceding week, compared with 171.3 in the corresponding week of 1947.

Comparative ratios of U. S. paper and paperboard production to mill capacity as reported by AP&PA are shown below:

	1948 Sept. 11	1948 Sept. 4	1947 Sept. 13	1946 Sept. 14	1945 Sept. 15
Paper	**78.1	†94.0	106.9	105.1	94.0
Paperboard	76.0	91.0	103.0	101.0	96.0

**Indicates 1948 volume of 139,786 tons, compared with 169,418 tons in the corresponding week of 1947. †Revised figure.

Paperboard Production (Tons)

	Sept. 11 1948	Sept. 4 1948	Sept. 13 1947
Production	144,410	182,685	186,174
New Orders	162,353	234,396	180,203
Unfilled Orders	410,240	392,753	472,229

Percent of Activity, Current 76%
Percent of Activity, Year to Date 96%

For Washing deinked stock

use

Calgon*

One of the major troubles in the washing of deinked stock is the deposition of hard carbonate scale on the wires of cylinder washers, on doctor boards and blades, in drain pipes and pumps.

***You can stop scale deposition, and even remove old scale by threshold treatment of shower water with a few parts per million of Calgon*—thus avoiding shut-downs for cleaning, and eliminating troublesome and potentially dangerous acid cleaning processes.**

Write us for full information concerning this and other uses of Calgon in the paper industry.

***T.M.Reg. U.S. Pat. Off.*

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH 30, PA.

IMPORTS

Week Ended September 18

NEW YORK

Newsprint

N. Y. Journal American, Markland, Liverpool, N. S., 469 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N. S., 1886 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 723 rolls.
Brooklyn Eagle, Markland, Liverpool, N. S., 703 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 112 rolls.
Richmond Newspapers, Markland, Liverpool, N.S., 1783 rolls.
Price & Pierce, Ltd., Markland, Liverpool, N.S., 294 rolls.
News Syndicate Co., Ethel Tombs, Gatineau, 269 rolls.
National City Bank, Goya, Antwerp, 330 rolls.
Times Herald, (Washington, D.C.), Goya, Rouen, 544 rolls.
News Syndicate Co., Vasaholm, Dalhousie, 7557 rolls.
Pagel Horton & Co. Inc., Ranenfjord, Oslo, 524 rolls.
R. A. Olsen, Kermic, Donnacona, 347 rolls.
H. G. Craig Co., G. D. D., Donnacona, 342 rolls.

Printing Paper

S. H. Pomerance, American Farmer, London, 1 cs.

Paperhangings

W. H. S. Lloyd & Co., American Farmer, London, 22 bls., 27 ctns., 14 cs.

Serviettes

H. W. Robinson, American Farmer, London, 6 cs.

Insulating Paper

National Carloading Co., American Farmer, 1 cs.

Gummed Paper

B F. Drakenfeld & Co., Parthia, Liverpool, 97 cs.
B. F. Drakenfeld & Co., Malayan Prince, Liverpool, 64 cs.

Emery Paper

(———), De Grasse, Havre, 3 cs.

Wallpaper

C. A. Haynes Co., Parthia, Liverpool, 3 crates.
Davis Paint Co. (Kansas City), Parthia, Liverpool, 19 ctns.
Nut Method Paint Co. (Kansas City), Parthia, Liverpool, 232 ctns., 8 cs. (Sample books).

Strawboard

Consolidated Novelty Co., Azelia City, Antwerp, 12 bls.

Binding Paper

Stevens Nelson Paper Corp., Wisconsin, Havre, 1 cs.

Wafer Paper

Delft Packing & Paper Co., Noordam, Rotterdam, 8 cs.

Writing Paper

Globe Shipping Co., Mauretania, Southampton, 3 cs.

Rice Paper

Damascus Art Flowers (Montreal), Sven Salen, Keelung, 2 cs.

Kraft Paper

(———), Mormacmail, Turku-Abo, 1091 rolls.

Boxboard

Jay Madden Corp., Mormacmail, Helsingfors, 114 rolls (bleached folding).

Decalcomanias

Penson & Co., Batory, Gdynia, 12 cs.

Surface Coated Paper

Gevaert Co. of America, Midland Victory, Antwerp, 3 cs.
Gevaert Co. of America, American Counsellor, Antwerp, 2 cs.

Baryta Coated Paper

Gevaert Co. of America, American Counsellor, Antwerp, 1 cs.

Tissue Paper

B. F. Drakenfeld & Co., Malayan Prince, Liverpool, 13 cs. (pottery).

Miscellaneous Paper

Lansen Naeve Corp., De Grasse, Havre, 2 cs.
N. V. Aneta, Sloterdyk, Rotterdam, 1 cs.

Rags, Baggings, Etc.

American Express Co., Parthia, Liverpool, 20 bls. wool rags.
Midwest Waste Material Co., Azelia City, Antwerp, 75 bls. waste canvas cuttings.
Lush Cotton Products Co., Jalanakti, Calcutta, 100 bls. cotton waste.
New England Waste Co., Jalakanti, Tuticorin, 450 bls. cotton waste.
Darmstad Scott & Courtney, Montevideo, Buenos Aires, 13 bls. rags.
Irving Trust Co., Sonnavind, Alexandria, 60 bls. old Hessian bagging.
National City Bank, Sonnavind, Alexandria, 80 bls. old burlap bagging.
Bank of New York, Sonnavind, Alexandria, 81 bls. old cotton rags.
(———), Sonnavind, Alexandria, 64 bls. threadwaste, 147 bls. old cotton rags.
Midwest Waste Material Co., Marit Maersk, Antwerp, 144 bls. scrap bagging.
E. J. Keller Co. Inc., Marit Maersk, Antwerp, 75 bls. jute bagging.
A. de Vries Trading Corp., Marit Maersk, Antwerp, 125 bls. old scrap bagging.
Bankers Trust Co., Marit Maersk, Rotterdam, 94 bls. old jute rags.
A de Vries Trading Corp., Marit Maersk, Rouen, 53 bls. rags.
Irving Trust Co., Marit Maersk, Rouen, 49 bls. rags.
Royal Manufacturing Co., Marit Maersk, Rouen, 80 bls. cotton waste.
New England Waste Co., Telfair, Santos, 35 bls. jute bagging waste.
Midwest Waste Material Co., Robert Maersk, Antwerp, 262 bls. scrap bagging.
McKay Co., Robert Maersk, Dunkirk, 519 bls. cotton waste.
J. J. Rozendaal, Robert Maersk, Dunkirk, 144 bls. cotton waste.
A de Vries Trading Corp., Midland Victory, Antwerp, 140 bls. jute waste, 101 bls. scrap bagging.
Midwest Waste Material Co., Midland Victory, Antwerp, 72 bls. jute waste.
National City Bank, Coer d'Alene Victory, Genoa, 245 bls. old waste bagging, 232 bls. paperstock.
E. J. Keller Co. Inc., Coer d'Alene Victory, Genoa, 57 bls. cotton rags.
H. Adlerstein, Coer d'Alene Victory, Genoa, 160 bls. burlap rags.
(———), Malakand, Calcutta, 181 bls. jute rags.

Old Rope

(———), Azelia City, Antwerp, 70 bls. rope waste.

Hidecuttings

Karr Ellis Co., Parthia, Liverpool, 537 pkgs.
H. Remis, Cape Cod, Barranquilla, 250 rolls.
Karr Ellis Co., Malayan Prince, Liverpool, 199 bags.

Casein

American Cyanamid Co., Tekla, Buenos Aires, 1000 bags.
T. J. Kane, Uruguay, Buenos Aires, 2000 bags.
American Cyanamid Co., Uruguay, Buenos Aires, 3100 bags.

Woodpulp

Price & Pierce, Ltd., Markland, Liverpool, N.S., 6321 bls. unbleached sulphite pulp.

BOSTON

American British Chemical Supplies, Telfair, Buenos Aires, 1000 bags casein.
International Purchasing Co., Midland Victory, Antwerp, 44 bls. old rope.
States Commercial Co., Midland Victory, Antwerp, 27 bls. threadwaste.
(———), Midland Victory, Antwerp, 79 bls. rags.

PHILADELPHIA

Darmstadt Scott & Courtney, Azelia City, Antwerp, 131 bls. jute waste.
National City Bank, Coer d'Alene Victory, 150 bls. old bagging waste.

BALTIMORE

Railway Supply & Manufacturing Co., Robert Maersk, Dunkirk, 49 bls. jutewaste.

NORFOLK

A de Vries Trading Corp., Midland Victory, Antwerp, 63 bls. scrap bagging.

Japanese Foreign Trade

WASHINGTON—Japanese paper exports in 1947 included 1,471 metric tons of newsprint, 400 reams of cellophane, 441 tons and 750 reams of cigarette paper. Cigarette paper in tons and most of the newsprint went to China. Hong Kong took the cellophane and cigarette paper in reams.

Imports of pulp and paper included 5,970 tons of sulphite pulp, 1,544 tons of kraft paper, 2,181 tons of unspecified paper, and 9,400 pounds of scrap paper. Most of the sulphite pulp and all the kraft paper were reported as coming from the U.S.S.R., the "unspecified" paper from the U.S., and the scrap paper from the U.K.

Pulp and paper production for 1948's first four months is compared with 1947's period and total in the accompanying table:

PRODUCTION (in short tons)

	First 4 mos. 1948	First 4 mos. 1947	Year 1947
Mechanical Pulp ..	68,707	50,116	183,642
Sulphite, unbl. ...	37,491	20,589	84,527
Sulphite, blch. ...	8,201	7,141	29,041
Other Pulp	6,068	3,205	15,370
Paper	126,804	84,479	316,411

* Source: Japanese P&P Assn. to U. S. Dept. of Commerce.

Latin American Market Grows

NEW YORK — There is a steady growth in the consumption of pulp paper, and paper products in all countries of Latin America, according to Leo W. Bowmall, vice president of Bulkley, Dunton Cellulose Exports, Inc., who has recently returned from a 24,000 mile flying trip which took him to Mexico, Cuba, Venezuela, Brazil, Uruguay, Argentina, Chile, and Peru.

New paper mills are going up in several countries, the capacity of others is expanding, and there is vigorous activity in every branch of the Latin American paper industry, Mr. Bowmall reports.

Bulkley, Dunton Cellulose Exports, Inc., is a pulp exporting branch of the Bulkley-Dunton organization, and the principal purpose of Mr. Bowmall's trip was to expand his company's outlets in line with the increased volume of business in those countries.

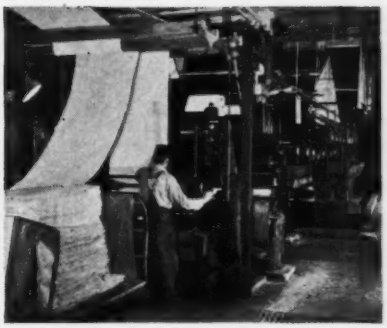
for 10 Years

RELIANCE V-S DRIVE

Industry after Industry!

PAPER & BOARD

TEXTILE



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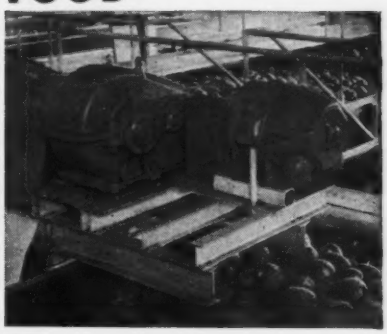

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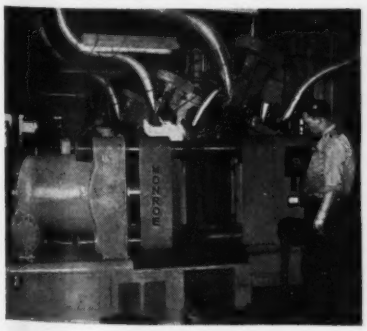
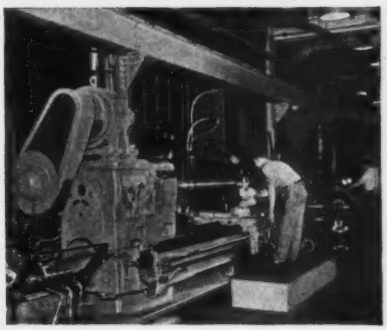


MINING

MACHINE TOOL



RELIANCE ELECTRIC AND ENGINEERING CO.

1099 IVANHOE ROAD • CLEVELAND 10, OHIO

"Motor-Drive for More Than Power"

PRICES

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—	
Rolls, contract	$96.00/100.00
Sheets	111.00/ —
Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.	
Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.75/ 8.00
Standard Wrapping Rolls	7.00/ —
Standard Wrapping Sheets	7.50/ —
Standard Bag	6.50/ —
Tissues—Per Ream 24x36 (480) 11 lbs. Zone 1.	
Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	— / —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Shred. Wh. No. 1 per lb.	.12¾/ .18
Toilet—Per Case of 100 rolls—1 M Sheets.	
Unbleached	$7.50/$10.00
Bleached	8.75/ 10.00
Paper Towels—Per Case of 3750—Zone 1.	
Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Manila—per cwt.—C-1 f.a.	
No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila Wrapping	9.75/ —
5 lb. Manila	10.75/ 11.25
Boards, per ton—	
Filled News	94.00/ —
Plain Chip	90.00/ —
Blchd. Mla. Ld. Chip*	105.00/ —
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	105.00/ —
Kraft Corr. .009	110.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—

White, 16 lb.

Bonds, per cwt.

	Carton 4 C't'n	Ton
100% Rag Ext. No. 1	$59.00 $54.55	$52.30
100% Rag	52.25 48.30	46.30
75% Rag	40.00 37.05	35.50
50% Rag	33.75 30.70	29.50
25% Rag	30.25 27.45	26.35

Ledgers, per cwt.

100% Rag Ext. No. 1	$57.00 $52.65	$50.50
100% Rag	50.25 46.40	44.50
75% Rag	40.00 37.05	35.50
50% Rag	33.75 30.70	29.50
25% Rag	30.25 27.45	26.35

Sulphite Bonds and Ledgers—

White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—

White, Cased Paper

	(Per cwt.) Case	Ton
No. 1 Glossy Coated	$20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
No. 1 Antique (Watermarked)	15.90	15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Bleached Sulphate	160.00/185.00
Unbleached Sulphate	125.00/150.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	$185.00/ —
Bleached Sulphite	185.00/ —
Unbleached Sulphite	155.00/ 157.50
Unbleached Kraft	147.50/ —

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/ 157.00
Unbleached Sulphate	147.50/ —

Norwegian Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$165.00/$185.00

New Domestic Cotton Cuttings

(F.o.b. Ship. Pt. Plus Dealer's Commission)

White Shirt	$11.00/$11.50
Unbleached Muslin	11.50/ 12.00
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.50/ 7.00
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.00/ 7.50
Unbleachable Khaki	6.00/ 6.50
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.o.b. Ship. Pt. Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No. 1 Roofing Rags	1.70/ 1.80
No. 2 Roofing Rags	1.60/ 1.70
No. 3 Jute Bagging	1.50/ 1.60
No. 4 Brussels & hrd. bck'd crpts.	1.50/ 1.60
No. 5A Roofing Rags	1.50/ 1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	4.00/ 4.50
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.35/ 2.50
Dark Cottons, European	2.30/ 2.35
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.25/ 2.30

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$7.25/ $7.50
Domestic Gunny, No. 1	7.25/ 7.50
Heavy Wool Tares	6.50/ 6.75
No. 1 Scrap Baggings	6.00/ 6.25
Roofing Bagging	1.50/ 1.75
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings F.o.b. New York, Baled

	(Per Ton)
No. 1 Hard White Envelope Cuts	120.00/ 130.00
No. 1 Hd. Wh. Shavings, unruled	110.00/ 120.00
Super Soft White Shavings	110.00/ 115.00
No. 1 Soft White Shavings	90.00/ 100.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Gd'wd Fly Leaf Shavings	35.00/ —
No. 1 Heavy Books & Magazines	19.00/ 21.00
Mixed Books	13.00/ 15.00
No. 1 White Ledger	70.00/ 75.00
Col. Ledger	45.00/ 50.00
Manila Tab. Cards	80.00/ 85.00
New Manila Envelope Cuttings	90.00/ 100.00
Extra Manilas	25.00/ 30.00
Mxd. Kraft, Bag Cuttings	60.00/ 70.00
Kraft Envelope Cutings	80.00/ 90.00
Triple Sorted, No. 1 Brown Soft Kraft	40.00/ 45.00
New Kraft Corrugated Cuttings	40.00/ 45.00
No. 1 Assorted Old Kraft	40.00/ 45.00
New Jute Corrugated Cuttings	18.00/ —
Old Corrugated	14.00/ 15.00
No. 1 News	12.00/ 13.00
No. 1 Mixed Papers	7.00/ 8.00
Box Board Cuttings	7.00/ 8.00
White Blank News	65.00/ 70.00
Overissue News	16.00/ 18.00
Mill Wrappers	14.00/ 16.00
Used Kraft Bags	40.00/ 45.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32¼/ .34¼
Tube Rope	.33¼/ .35½
Wrapping	.36 / .38¼
Cotton	.58 / .60
Polished Cotton	.55 / —
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.31 / .35
(American Hemp)	
Polished Hemp	.46½/ .48
Unpolished	.35 / .37¼

PHILADELPHIA

Domestic Rags (New)

(F.o.b. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.10½/ .11
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06 / .06½
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cottons—According to grade—	
Washable Shredding	.03 / .03½
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.05¾/ .06½
Bleachable Cotton Cuttings	.06½/ .07
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

White No. 1—Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.50 / 2.75
Repacked	3.00 / 3.25
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.65 / 1.70
Domestic No. 2	1.55 / 1.60
Roofing Bagging	1.45 / 1.50
Old Manila Rope	— / 5.75

(Continued on page 34)

OLIVER
Ringvalve
FILTERS

BEST

for SULPHATE WASHING

for SULPHITE WASHING

To back up the claim of "best"—which some may challenge—we offer the following operational advantages:

1 Oliver Ringvalve Washers permit efficient operations with lower consistency feed, thus promoting more uniform and better sheet formation, which results in better washing. High hydraulic capacity does it.

2 Multi-stage washing plus re-washing can be done on fewer units and with less pumping and accessory equipment when used as two-stage units.

3 Either single-stage or two-stage washing on single unit optional.

4 Central location of valve minimizes flow friction.

5 Ringvalves can operate with barometric leg, producing maximum vacuum at the sheet.

6 Greater safety factors in design and construction result in low maintenance.

The Oliver Ringvalve Filter has well-earned its high record of acceptance.

OLIVER UNITED FILTERS INC.

UF INC.

New York 18, N. Y.
33 West 42nd Street

Chicago 1, Ill.
221 N. LaSalle Street

San Francisco 11, California

Western Sales Division
Oakland 1, California
2900 Glascock Street

Sales and Manufacturing Representative:
E. Long Limited
Orillia, Canada

Factories: Oakland, Calif. • Hazleton, Pa. • Orillia, Canada • Melbourne, Australia

PRICES

CONTINUED FROM PAGE 32

Bagging

(F.o.b. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	$5.50 / 6.00
No. 1 Clean Bright—	
Sisal Strings	.04½/ .05
No. 2 Clean Bright—	
Sisal Strings	.03½/ .04
Sisal Jute	.02¾/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Old Papers

F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/$115.00
No. 1 Hard White Shavings, unruled	100.00/ —
Soft White Shavings	80.00/ —
White Blank News	65.00/ 70.00
Soft White Shavings, One Cut	/ 80.00
No. 1 White Ledger	65.00/ 70.00
No. 1 Heavy Books & Magazines	20.00/ 22.00
Overissue Magazines	nominal
New Manila Envelope Cuttings	75.00/ —
No. 1 Assorted Old Kraft	35.00/ 40.00
No. 1 Mixed Paper	7.00/ 8.00
Box Board Cuttings	8.00/ 10.00
Kraft Corrugated Cuttings	75.00/ 80.00
Old Corrugated	14.00/ 16.00
Overissue News	13.00/ 15.00
No. 1 News	10.00/ 12.00

BOSTON

Old Papers

F.o.b. Boston, Mill Prices, Baled

No. 1 Hard White Shavings, unruled	$6.25 /$6.75
No. 1 Hard White Shavings, ruled	6.00 / 6.50
Soft White Shavings, Misc.	6.00 / 6.25
No. 1 Fly Leaf Shavings	— / —
No. 2 Fly Leaf Shavings	4.25 / —
No. 1 Grdwd. Fly Leaf Shvgs.	1.75 / 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50 / 1.75
Mixed Colored Shavings	2.00 / 2.25
New Manila Env. Cuts, one cut	4.50 / 4.75
Hard White Envelope Cuts, one cut	7.00 / —
Triple S'ted No. 1 Br. Soft Kraft	3.75 / 4.00
Mixed Kraft Env. & Bag Cuttings	4.00 / 4.25
Kraft Envelope Cuttings	5.00 / 5.50
No. 1 Heavy Books & Magazines	1.75 / —
New Manila Env. Cutt'gs, one cut	2.35 / —
New Manila Envelope Cuttings	4.00 / 4.25
White Tabulating Cards	5.00 / —
Groundwood Tabulating Cards	1.50 / 1.75
White Blank News	2.25 / 2.50
No. 1 Assorted Old Kraft	3.50 / 4.00
No. 1 Mixed Paper	.47½/ —
Overissue News	.90 / 1.00
No. 1 News	.55 / .60
Box Board Cuttings	.60 / .70
New Corrugated Cuttings, Kraft	2.75 / 3.00
Old Kraft Corrugated Containers	2.00 / 2.25
Old Corrugated Containers	— / 1.10
Jute Corrugated Cuttings	1.07½/ —
Paper Strings	2.00 / 2.25

Bagging

(F.o.b. Boston)

Gunny Bagging—	
Foreign	(nominal)
Domestic	7.00 / —
No. 1 Old Rope	6.25 / —
Mixed Strings	1.50 / —
Transmission Rope—	
Foreign	nominal
Domestic	3.00 / 3.50
Manila Rope—	
Foreign	nominal
Domestic	6.25 / —
Jute Carpet Threads	6.00 / —
Bleachery Burlap	— / 8.00
Scrap Burlap—	
Foreign	6.50 / 6.75
Domestic	6.50 / 6.75
South America	6.50 / 6.75
Wool Tares	
Foreign	7.50 / —
Domestic	7.50 / —
Austr. Wool Pouches	7.50 / —
New Zealand Wool Pouches	5.00 / —
New Burlap Cuttings	7.00 / —
Heavy Baling Bagging	7.00 / 7.50
Paper Mill Bagging	— / 5.00
No. 1 Roofing Bagging	1.75 / —

Domestic Rags (New)

(F.o.b. Boston)

Shirt Cuttings—	
New Light Prints	.07¾/ —
Fancy Percales	.08 / —
New White No. 1	.11 / .11¾
New Light Flannelettes	.08 / .08½
Canton Flannels, Bleached	.10 / .11
Underwear Cutters, Bleached	.11½/ —
Underwear Cutters, Unbleached	.11 / .12
Silesias No. 1	.08 / .08½
New Black Silesias	.04½/ —
Red Cotton Cuttings	.05¼/ —
Blue Overalls	— / .08½
Soft Unbleached	.11 / .12
Blue Cheviots	.08 / .08½
Fancy	.06 / —
Washable	.06 / —
Khaki Cuttings	.06½/ .07½
Corduroy	.04 / —
Men's Corduroy	.04 / —
Khaki Canvas	— / .06
B. V. D. Cuttings	.11½/ —

Domestic Rags (Old)

(F.o.b. Boston)

White No. 1—	
Repacked	5.00 / 5.50
Miscellaneous	4.50 / 5.00
White No. 2—	
Miscellaneous	2.65 / —
Twos and Blues, Repacked	2.75 / —
Old Blue Overalls	4.00 / 4.50
Thirds and Blues, Repacked	2.20 / —
Miscellaneous	1.80 / —
Black Stockings	3.50 / 4.00
Roofing Stock—	
No. 1	1.70 / —
No. 2	1.60 / —
No. 3	1.50 / —
No. 4	1.50 / —
No. 5, Quality A.	1.60 / —
Quality B.	1.50 / —
Quality C.	.95 / —
Old Manila Rope	6.00 / —

Foreign Rags

(F.o.b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F.o.b. Chicago) Mill Prices, Baled

Shavings—	
No. 1 Hard White Envelope cuts, one cut	$120.00/ —
No. 1 Hard White Shavings, unruled	114.00/ —
No. 1 Soft White Shavings	100.00/ —
No. 1 White Ledger	60.00/ 65.00
No. 1 Heavy Books & Magazines	28.00/ 30.00
White Blank News	55.00/ —
Mixed Kraft Env. & Bag Cuttings	80.00/ —
No. 1 Assorted Old Kraft	25.00/ —
Overissue News	20.00/ —
No. 1 News	— / 16.00
No. 1 Mixed Paper	9.00/ —
Old Corrugated	15.00/ —
Mill Wrappers	11.00/ —

MARKETS

Blanc Fixe

Supply good; demand steady. Pulp is currently quoted at $85.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75.00 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Supply adequate. Delivery good. Shortage of shipping containers restricts export. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l. works.

Casein

Demand continues light. Argentine market weak with prices softer as flush season approaches. Domestic prices firm, supply light. Current prices on processed acid precipitated casein at 28½ to 32 cents per pound for domestic grades and 25¾ to 26 cents for imported grades, f.o.b. shipping point.

Caustic Soda

Dry types continue short with renewed demands and strike likely to tighten situation. Shortage of tank cars noted. Solid caustic is reported at $3.10 per cwt.; flaked and ground is quoted at $3.50 per cwt. in 400 pound drums, $4 to $4.25 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.50 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt.; at works.

China Clay

Demand steady. Supply excellent. Domestic filled clay is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply approximately in balance but likely to tighten as result of strike. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-unit tank cars, f.o.b., works.

Rosin

Buying dull. Export inquiry good but awaits ECA dollars. Prices steady. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, I, K, $7.37. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

Rosin Size

Heavy demand. Supply good. Seventy percent gum and pale wood grades. Tank cars, $6.20 to $6.30, f.o.b. southern shipping point.

Salt Cake

Heavy kraft production keeps demand ahead of supply. Production under contract. Domestic salt cake quoted at $25 to $28.

Soda Ash

Deliveries up to schedule. Export likely to expand; controls to be lifted. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate

Supply good. Demand easier. Reported as $1.95 per cwt. paper bags, carload lots.

Starch, Corn

Supply good. Demand moderate. Prices steady. Record crop forecast. Pearl grade quoted at $6.66 per 100 pounds; powdered starch at $6.77 to $6.81 per 100 pounds; car lots, New York.

Starch, Potato

Demand increased. Prices lower. Supply good with heavy crop forecast. High grade quoted at $5.60 cwt. f.o.b. Idaho, $6.25 f.o.b. Aroostook; Pearl grade $6.10 cwt. f.o.b. Aroostook.

Sulphate of Alumina

Demand increased. Supply steady. The commercial grades are quoted at from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Demand active. Supplies steady. Production shows heavy gain. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc

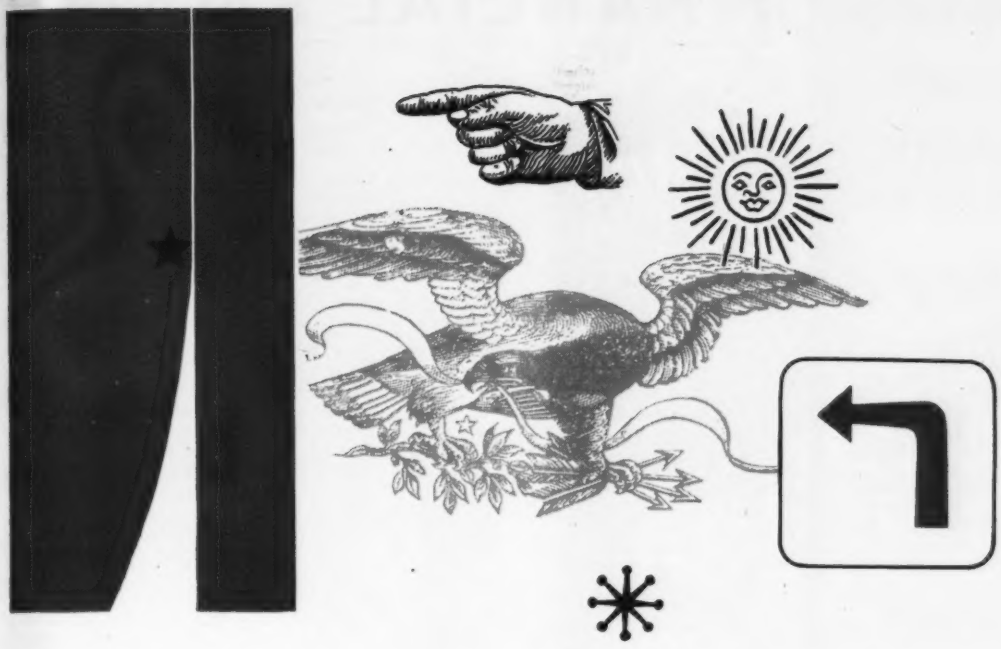
Demand continues far in excess of supply. Prices steady. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Tapioca Flour

High grades in fair supply and demand. Superior high quoted at $10.25 cwt., high grades $9.25 cwt., on dock Atlantic and Gulf ports, in limited supply. Medium and low grades in adequate supply.

Titanium Dioxide

Supply of paper grades continues unequal to demand. Shipments on allocation. Anastase 18c pound carload lots, 18¾-19c l.c.l., rutile, 20c pound carload lots, 20¼-21c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.



Translation

In winter or summer, all over America,
we point the way to better, smoother, more
economical slitter operation.
Just specify LANGSTON—
symbolic of shear-cut,★ clean-cut
rolls of highest quality.
Samuel M. Langston Company, Camden, New Jersey.

Langston

SLITTERS AND ROLL WINDERS

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

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KIDDER, PEABODY & CO.

Founded 1865

Members
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Albany Newport
Altoona Providence
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New Bedford Wilkes-Barre

New York Teletype NY 1-193

FINANCIAL RECORD

Preferred Stocks	Per Share Calendar Year 1947	Earnings 12 Mos. to Approx. 6/30/48	Indic. Annual Divid. Rate	Sept. 22 Closing Market Price
Armstrong Cork Co. $3.75 Cum.	$38.64*	$43.53*	$3.75	
Armstrong Cork Co. $4.00 Cum. Conv.	38.64*	43.53*	4.00	111
Celotex Corp. 5% Cum.	24.25c	26.25g	1.00	18¾
Champion Paper & Fibre $4.50 Cum.	65.90f		4.50	
Container Corp. of Amer. 4% Cum.	102.74	88.25	4.00	
Crown Zellerbach $4.20 Cum.	56.40f	55.07g	4.20	98½
Crown Zellerbach $4.00 Cum. Conv. 2nd	211.39f	217.70g	4.00	
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	9.16	8.59	2.50	53
Flintkote Co. $4 Cum.	81.91	80.04	4.00	101
Robert Gair Co. Inc. 6% Cum.	18.01	16.26	1.20	17¾
International Paper Co. $4 Cum.	236.51	245.85	4.00	
Johns-Manville $3.50 Cum.	128.81	134.48	3.50	103½
Kimberly Clark Corp. 4½% Cum.	70.03	73.34	4.50	
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88	100.73	4.00	
MacAndrews & Forbes 6% Cum.	62.20	62.56	6.00	
Mead Corp. 4¼% Cum.	81.56	79.68	4.25	
Mead Corp. 4% Cum. Conv. 2nd	53.34	51.75	2.00	36½
Paraffine Cos. Inc. 4% Cum. Conv.	152.76a		4.00	101½
Rayonier Inc. $2 Cum.	13.58	15.44	2.00	
St. Regis Paper Co. 4.40% 1st A	76.93	84.43	4.40	88
Scott Paper Co. $3.40 Cum.	43.95	50.24	3.40	90
U. S. Gypsum Co. 7% Cum.	211.34	362.32	7.00	171¼
United Wallpaper Inc. 4% Cum. Conv.	(d)1.35a		2.00	23½
West Virginia Pulp & Paper 4½% Cum.	75.75c	78.49g	4.50	104
Common Stocks				
APW Products Co.	$1.24	$1.46	$0.25	
American Writing Paper Corp.	1.61	.47	0.25	
Armstrong Cork Co.	6.41	7.17	2.60	44¾
Celotex Corp.	6.59c	7.15g	2.00	7
Certain-Teed Prods. Corp.	3.75	3.92	0.90	15
Champion Paper & Fibre	5.57f		2.00	22¼
Congoleum Nairn Co.	4.55	5.12	2.00	34¾
Container Corp. of America	10.09	8.50	2.00e	35⅛
Crown Zellerbach	6.81f	6.53g	2.00	28
Dixie Cup Co.	5.87	5.37	1.00	31
Flintkote Co.	6.27	5.83	2.50	32¼
Robert Gair Co. Inc.	2.83	2.59	0.40	7⅛
Great Northern Paper Co.	4.56	4.44	2.40	38⅞
International Paper C	15.02	15.62	4.50	57½
Johns-Manville Corp.	3.17	3.28	1.40	33⅞
Kimberly-Clark Corp.	4.29	4.52	1.40	20⅝
MacAndrews & Forbes Co.	3.68	3.70	2.50	
Marathon Corp.	3.39c	3.93g	1.40	21¾
Mead Corp.	7.33	7.10	2.00	18½
National Container Corp.	4.13	3.11	1.20	10⅛
Paraffine Cos. Inc.	2.40a		1.20	22½
Rayonier, Inc.	7.30	8.47	1.00	30⅝
Ruberoid Co.	10.88	12.13	2.75	
St. Regis Paper Co.	2.66	2.87	0.60e	63⅞
Scott Paper Co.	3.02	3.49	2.20	105⅛
Sutherland Paper Co.	6.87	6.56	2.50	44
Taggart Corp.	1.29		0.60	
Union Bag & Paper Corp.	7.93	8.35	3.00	32⅛
United Board & Carton	4.95b	3.39g	1.00	105⅝
U. S. Gypsum Co.	10.00	12.49	6.00	98
United Wallpaper	(d)0.11a		—	3⅞
West Virginia Pulp & Paper	11.40c	11.56g	4.00	47½

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Plus extras
(f) Year ended 4/30/48
(g) 12 months to approximately 7/31/48
(h) 12 months to 8/21/48
(*) Pro forma

Dividends Declared

Simplex Paper Corp. on September 13 declared a quarterly dividend of 20 cents per share payable October 2, to stockholders of record September 23.

Nekoosa Edwards Paper Co. will pay a third-quarter dividend of 25 cents and special dividend of an additional 25 cents on September 30 to shareholders of record September 17. The 50 cents per share payable September 30 will bring the 1948 dividend total to $1.25 per share. The firm paid a 25-cent first-quarter dividend and a second-quarter dividend of 25 cents plus a second-quarter special dividend of 25 cents. Dividend payments in 1947 totaled $1.75 per share. Net profit after in-

come taxes for the first six months of this year amounted to $1,572,000, or a net increase of $123,000 over the first six months of 1947. Since these figures were tabulated, all hourly wage rates have been increased ten per cent, the company states.

Union Bag & Paper Corp., reported net income of $3,621,212 equal to $2.44 a share for the three months ended June 30, 1948, compared with $3,652,155 and $2.46 a share in the first quarter of 1948 and $3,071,601 and $2.42 per share in the June quarter of last year. Sales for the three months ended June 30, 1948 were $19,076,336, contrasted with $19,386,267 for the year's first quarter, and $15,807,942 in the second quarter, 1947. For the six months period ended June 30, 1948, the company's net income was $7,273,367 or $4.90 per share, the largest net income for any six months in the company's history. This compares with $5,743,542 in the comparable period of 1947, equal to $4.52 a share. Sales for the six months were $38,462,603 compared with $30,097,517 in 1947's period.

U. S. Envelope Co., estimated its net earnings for the six months period ended July 3, 1948 at $445,773.72 or $11.69 per common share after depreciation charges and estimated Federal Income Tax deductions. This contrasts with $833,200.79 and $26.45 in 1947's six months period. Semi-annual dividents of $3.50 per preferred share and $2.00 plus special dividend of $2.00 per common share, payable Sept. 1, 1948 to holders of records, Aug. 18, 1948, have been declared.

Union Bag & Paper Corp., declared extra dividend of 25 cents and a regular quarterly dividend of 50 cents payable Sept. 14 to stock of record Sept. 7. Similar extra was paid in previous quarters.

Ruberoid Co., reported profit of $2,708,679 or $6.81 per common share for the first six months of 1948, compared with $2,211,402 and $5.56 for the same period, 1947.

Stone Container Corp., showed net income of $604,596 or 86 cents a share for the six months of 1948 against $1,369,545 and $1.96 last year.

Rhinelander Paper Co., voted a regular quarterly dividend of 50 cents on common stock payable Sept. 30 to holders of record Sept. 20.

"Best of Industry" Award

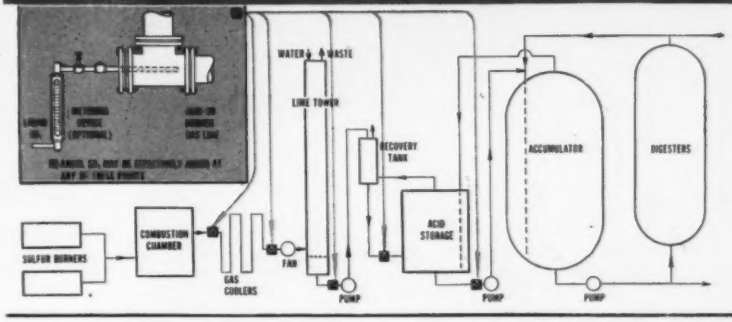
NEW YORK—The Champion Paper & Fibre Co., Hamilton, Ohio, has been designated to receive the "Best of Industry" award for its current annual stockholder report, Weston Smith, vice president of *Financial World*, reports the "Bronze Oscar" for the pulp and paper industry will be presented to Reuben B. Robertson, president of Champion, at the annual award banquet to be held at the Hotel Pennsylvania on October 21.

the road to 深火* is paved with good intentions

...DON'T SHUT DOWN YOUR MILL...if you intend to repair your acid system

*Confucius say—"No hell in Chinese language"

Use ANSUL SO_2 and maintain maximum production!



If you must repair or replace your sulphur burner, combustion chamber or gas coolers, use ANSUL liquid SO_2 and keep your mill operating at capacity.

1—Avoid interruption of acid plant operation.
2—Maintain peak capacity in pulp plant during repairs of acid system.
3—Get proper balance between free and combined SO_2.
4—At a very small installation cost.

Send for complete information. You will learn also how to use Ansul Liquid SO_2 to fortify your cooking acid during the Summer months, and for green wood cooks . . . to improve your digester schedules, obtain more complete pulping and better screening of pulp.

Ansul liquid SO_2 may be added simultaneously at one or more points in the system (see diagram).

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Prepare for an emergency. Consult the Ansul Technical Staff *NOW*. Learn how easy and economical it is to avoid shutdown headaches.

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ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
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OBITUARY

Howard Whittemore

Howard Whittemore, 83, chairman of the board of Parsons & Whittemore, Inc., New York City, died at his home in Rye, N. Y., on September 17. Widely known in the pulp and paper trade here and abroad, Mr. Whittemore started his career in the industry almost 50 years ago when he joined in business with his cousin, William H. Parsons, and later founded Parsons & Whittemore, Inc. Having been previously engaged in foreign trade, he pioneered the opening of many overseas markets for the American paper trade. Following the retirement of Mr. Parsons in 1922, Mr. Whittemore succeeded to the presidency of the company he established, and last year owing to ill health he resigned that office but continued as chairman of the board. Mr. Whittemore was president of the Westchester County Bible Society and manager of the American Bible Society, as well as an elder of the Rye Presbyterian Church. He was a member of the Union League Club of New York, the Apawamis Club and the American Yacht Club.

Aldus C. Higgins

Aldus C. Higgins, 75, closely identified for nearly a half century with the Norton Co., Worcester, Mass., abrasive wheel manufacturer, died at his home on September 10. Surviving Mr. Norton is his widow, the former Mary Sprague Green; a daughter, Elizabeth B., wife of Ernest Angell of New York and Connecticut; a son, Milton P. Higgins, president of the Norton Co.; a brother, John Woodman Higgins; and a sister, Mrs. Lewis I. Prouty.

William N. Witt

William N. Witt, 71, a director and assistant treasurer of F. W. Anderson & Co., New York wholesale paper firm until his retirement six months ago, died at his home in Upper Montclair, N. J., on September 13. He leaves a son, Harry W. Witt.

John E. Costello

John E. Costello, retired, for many years selling clays to the paper mills for the J. M. Huber Co., Chicago, died on September 11. Mr. Costello's son, William, is with the Joseph E. Longhead Co., Kalamazoo, Mich., serving the paper mills in that territory. Surviving Mr. Costello, in addition to his son, is a daughter, Mrs. Ruth Kolombatovich.

Chilean Cellulose Mill

SANTIAGO, Chile — A $7,500,000 World Bank loan to develop Chile's forest industries has been favorably recommended by the bank's technical representative, Charles Hanze, it was reported here on Sept. 15: The project includes building a cellulose plant at Puerto Montt costing $5,000,000 for plant machinery and $2,000,00 for sawmills.

(In Washington, World Bank officials said a general plan for development of Chilean forest industries was under consideration, but that nothing final had been decided.

(Washington financial sources pointed out that the World Bank already had approved a $16,000,000 Chilean loan for hydroelectric projects and buying farm machinery. This loan now awaits ratification by the Chilean Congress and it was doubted that any new projects would be approved before such ratification was forthcoming.)

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
August 7	97.0	August 9	105.1
August 14	96.1	August 16	104.8
August 21	97.7	August 23	103.7
August 28	95.2	August 30	104.1
September 4 (Revised)	94.0	September 6	84.7
September 11	**78.1	September 13	106.9

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5	Jan.	100.3
Feb.	105.9	June	106.2	Nov.	109.3	Feb.	99.8
Mar.	106.1	July	93.5	Dec.	101.5	Mar.	100.8
Apr.	105.1	Aug.	104.2			Apr.	100.8
		Sept.	102.0	Year Avg.	104.3	May	100.5
						June	‡94.5
						July	‡88.1
						Aug.	‡96.8

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date..	94.7	92.4	88.0	87.7	87.8	99.9	103.3	96.9
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

** Indicates 1948 volume of 139,786 tons—Comparable week 1947—169,418.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
August 7	90	August 9	97
August 14	93	August 16	100
August 21	93	August 23	100
August 28	93	August 30	99
September 4	91	September 6	79
September 11	76	September 13	103

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	100	94	81	92					

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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Prepared by the joint Technical Staffs of Pittsburgh Plate Glass Company, Columbia Chemical Division, and Southern Alkali Corporation, this 72-page Chlorine Manual is just off the press. It presents basic information and data which is useful to technical, transportation and purchasing men, and of interest to managing executives and others who are concerned with the buying, handling and use of Chlorine. We shall be glad to send you a copy. Just send your request on your company letterhead. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield, Pittsburgh 13, Pa.

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Congress Committee Awards 4th Quarter Paper Contracts

Washington, September 20.—Awards were announced today by the Joint Congressional Committee on Printing for paper for use of the Government Printing Office for the three-months' period beginning October 1, 1948. Bids for the paper were received last week.

The awards are as follows:

Paper Awards

No. 1—Rejected.

No. 3—Paper Corp. of U. S. 11.14.

No. 4—Paper Corp. of U. S. 11.14.

No. 5—Paper Corp. of U. S. 11.14.

No. 6—Walker, Goulard, Plehm Co. 9.98.

No. 9—Walker, Goulard, Plehm Co. 9.98.

No. 10—Stanford Paper Co. 9.98.

No. 17—Mead Sales Co. 10.89.

No. 18—Walker, Goulard, Plehm Co. 12.15.

No. 19—Walker, Goulard, Plehm Co. 11.35.

No. 20—Paper Corp. of U. S. 11.41.

No. 21—R. P. Andrews Paper Co. 9.21.

No. 22—R. P. Andrews Paper Co. 9.21.

No. 26—John W. McNeil, Inc. 15.949.

No. 27—John W. McNeil, Inc. 15.949.

No. 33—R. P. Andrews Paper Co. 10.22.

No. 35—Barton, Duer & Koch Paper Co. 11.56.

No. 36—Barton, Duer & Koch Paper Co. 11.56.

No. 40—Mead Sales Co. 11.45.

No. 42—Walker, Goulard, Plehm Co. 13.52.

No. 44—Stanford Paper Co. 10.50.

No. 45—Walker, Goulard, Plehm Co. 12.10.

No. 46—Walker, Goulard, Plehm Co. 12.15.

No. 47—Paper Corp. of U. S. 13.24.

No. 48—Mathers-Lamm Paper Co. 13.17.

No. 49—Walker, Goulard, Plehm Co. 19.44 per 50,000; D. L. Ward Co. 20.14 per 50,000.

No. 51—Walker, Goulard, Plehm Co. 13.54.

No. 52—Walker, Goulard, Plehm Co. 11.39.

No. 53—Walker, Goulard, Plehm Co. 10.89.

No. 54—Walker, Goulard, Plehm Co. 9.98.

No. 55—R. P. Andrews Paper Co. 9.46.

No. 57—Walker, Goulard, Plehm Co. 12.50.

No. 58—Walker, Goulard, Plehm Co. 12.40.

No. 61—Mathers-Lamm Paper Co. 10.88.

No. 62—Mathers-Lamm Paper Co. 14.47.

No. 69—Stanford Paper Co. 15.98.

No. 70—Stanford Paper Co. 16.44.

No. 73—Mudge Paper Co. 16.189.

No. 78—Barton, Duer & Koch Paper Co. 17.15 per 200,000 lbs.; Paper Corp. of U. S. 17.25 per 200,000 or balance.

No. 79—Stanford Paper Co. 1925.

No. 83—Frank Parsons Paper Co. 14.98.

No. 85—Paper Corp. of U. S. 18.25.

No. 87—Graham Paper Co. 20.24.

No. 89—Barton, Duer & Koch Paper Co. 24.00.

No. 91—Butler Co. 23.789.

No. 102—Mathers-Lamm Paper Co. 12.17.

No. 104—Mathers-Lamm Paper Co. 12.98.

No. 105—Butler Co. 17.18.

No. 106—Birmingham & Prosser Co. 15.239.

No. 107—Birmingham & Prosser Co. 15.239.

No. 108—Mudge Paper Co. 15.239.

No. 109—Butler Co. 14.68 per 160,000; Mudge Paper Co. 14.68 per 160,000.

No. 113—John W. McNeil, Inc. 16.19.

No. 121—Chicago Paper Co. 16.55.

No. 150—Paper Corp. of U. S. 13.13.

No. 151—Whitaker Paper Co. 13.34.

No. 154—Butler Co. 15.589.

No. 155—John W. McNeil, Inc. 15.489.

No. 156—Howard Paper Mills (Aetna Div.) 15.83.

No. 157—Barton, Duer & Koch Paper Co. 16.25.

No. 178—Barton, Duer & Koch Paper Co. 29.00.

No. 182—Whitaker Paper Co. 10.81.

No. 185—Walker, Goulard, Plehm Co. 11.65.

No. 188—Howard Paper Mills (Aetna Div.) 16.29.

No. 191—Barton, Duer & Koch Paper Co. 16.87.

No. 196—Barton, Duer & Koch Paper Co. 27.95.

No. 202—Paper Corp. of U. S. 11.41.

No. 203—R. P. Andrews Paper Co. 12.87.

No. 206—Paper Corp. of U. S. 18.74.

No. 208—Walker, Goulard, Plehm Co. 8.38.

No. 217—Rejected.

No. 218—Rejected.

No. 252—Stanford Paper Co. $21.89 per M sheets.

No. 271—Birmingham & Prosser Co. 11.30c.

No. 301—Stanford Paper Co. $78.34 per 1,000 sheets.

No. 303—Stanford Paper Co. $106.23 per 1,000 sheets.

No. 306—Walker, Goulard, Plehm Co. 10.16c.

No. 307—Walker, Goulard, Plehm Co. 11.21.

No. 309—Walker, Goulard, Plehm Co. 11.67.

No. 325—R. P. Andrews Paper Co. 8.23 per 1,400 M pounds; Whitaker Paper Co. 8.79 1,600 M or balance.

No. 327—R. P. Andrews Paper Co. 8.23.

No. 351—R. P. Andrews Paper Co. $15.34 per hundred sheets.

No. 352—R. P. Andrews Paper Co. $34.44 per hundred sheets.

No. 360—Mathers-Lamm Paper Co. 4.0275c.

No. 366—Barton, Duer & Koch Paper Co. 5.80.

No. 367—R. P. Andrews Paper Co. 5.90.

No. 369—Mead Board Sales, Inc. 6.15 No. 41 only; Mead Board Sales, Inc. 5.775 Nos. other than 41.

No. 370—Mead Board Sales, Inc. 5.775 Nos. other than 41.

Building In Sacramento

SACRAMENTO, Calif. — The Zellerbach Paper Co. has announced plans for constructing a plant and warehouse on a 10-acre site here, to be in operation early next year.

Increases Storage Facilities

RHINELANDER, Wis. — The Rhinelander Paper Co. has purchased the Oneida Boat Co. site and buildings near the end of Eagle street and will utilize them for storage.

Smith Warehouse Sold

COHOES, N. Y.—A large warehouse here occupied by the Smith Paper Co., of Lee, Mass., has been sold to Walter H. Wertime, Jr. The property was used to store baled hemp.

Ohio Boxboard Ups Morris

RITTMAN, Ohio—J. C. Morris, formerly director of research and development at the Ohio Boxboard Co., has been made assistant production manager.

Meier in New Post

CANTON, Ohio—Lawrence J. Meier is now associated with the Paper Products Corp. Previously Mr. Meier was with the M. Conley Co., for many years.

Fire Guts Plants

LOUISVILLE, Ky.—Fire gutted a building housing the Kentucky Paper Box Co. and the Finger Paper Co., 117 North Sixth street, on September 15, causing a loss estimated at $250,000.

The loss estimates came from Fred Zur Schmiede, owner of both box companies. Part of the loss is covered by insurance, he said.

"The fire hit our plants in their peak season," Schmiede stated. "However, we have been offered several other locations and expect to resume production shortly. The two firms make such items as candy and shoe boxes."

Established 74 years ago, the Kentucky Paper Box Co. is among the oldest in the South.

Carl F. ter Weele Appointed

ANSONIA, Conn.—The Farrell-Birmingham Co., Inc., of Ansonia and Derby, Conn., and Buffalo, N. Y., has named Carl F. ter Weele as export manager. Mr. ter Weele will make his headquarters at the company's New York office, 3700 Chrysler building.

American Appoints National

HAWTHORNE, N. J.—American Coating Co., has named the National Coated Products Co., 40 Worth street, New York City, as selling agent. Howard S. Jones and Dana M. Martin are officers of the selling agency.

Vilsack to Taylor

CHICAGO—Robert M. (Bob) Vilsack has joined the sales department of Taylor Forge & Pipe Works. Mr. Vilsack was recently associated with the M. W. Kellogg Co. of New York in engineering and sales work.

New Foxboro Building

HOUSTON, Texas—Construction of its attractive new building being completed, the local branch of the Foxboro Co., Foxboro, Mass., will move on October 15 from the Sterling Building to 2518 South boulevard.

Vaughan to Sprout, Waldron

MUNCY, Pa.—Frank C. Vaughan has been named sales manager of the pulp and paper machinery division of Sprout, Waldron & Co., to fill the vacancy created by the resignation of J. D. Brown.

Providence Inspection Office

PROVIDENCE, R. I.—The Mutual Boiler Insurance Co., of Boston, has opened an inspection office at 17 Exchange street. Inspections are under the direction of Jack Groves, supervising inspector.

Named Chain Belt Agent

MILWAUKEE—The Chain Belt Co. has named the Capital Machine & Welding Works of Sacramento Calif. as a distributor of Baldwin-Rex roller chains.

Chemical Firms Merge

PHILADELPHIA — Merger of the Resinous Products & Chemical Co. with the Rohm & Haas Co. was approved here on September 14 by the stockholders of both companies. The following officers were named: President, Otto Haas; executive vice-president, Duncan Merriwether; vice-presidents, C. E. Andrews, A. L. Blount, R. A. Connor, L. W. Covert, D. S. Frederick, E. L. Helwig and L. Klein; secretary, S. C. Kelton; treasurer, W. T. McClintock; assistant secretaries, J. F. Bergin, P. J. Clarke and William Kohler; assistant treasurers, T. V. Monahan and George Schnabel.

Directors of the company are: Otto Haas, chairman; E. C. B. Kirsopp, vice-chairman; William W. Bodine, R. A. Connor, L. W. Covert, D. S. Frederick, W. J. Friedman, F. O. Haas, John C. Haas, S. C. Kelton, L. Klein and Duncan Merriwether.

New Departure Changes

BRISTOL, Conn. — Frank J. Miller, recently made general sales manager of the New Departure Division of General Motors Corp., succeeding Lester G. Sigourney, retired, has disclosed the following appointments in the sales staff effective September 10: Lorne F. Lavery, formerly manager of the Detroit office, becomes assistant general sales manager at Bristol; Charles D. McCall, formerly manager of automotive sales at Detroit, succeeds Mr. Lavery as manager of the Central Region; Howard A. Offers, sales engineer in the Chicago territory, becomes manager of the mid-western region with headquarters in Chicago; Raymond J. Lynch, formerly engineer of the Chicago office, is now supervisor of engineering for the central and midwestern regions.

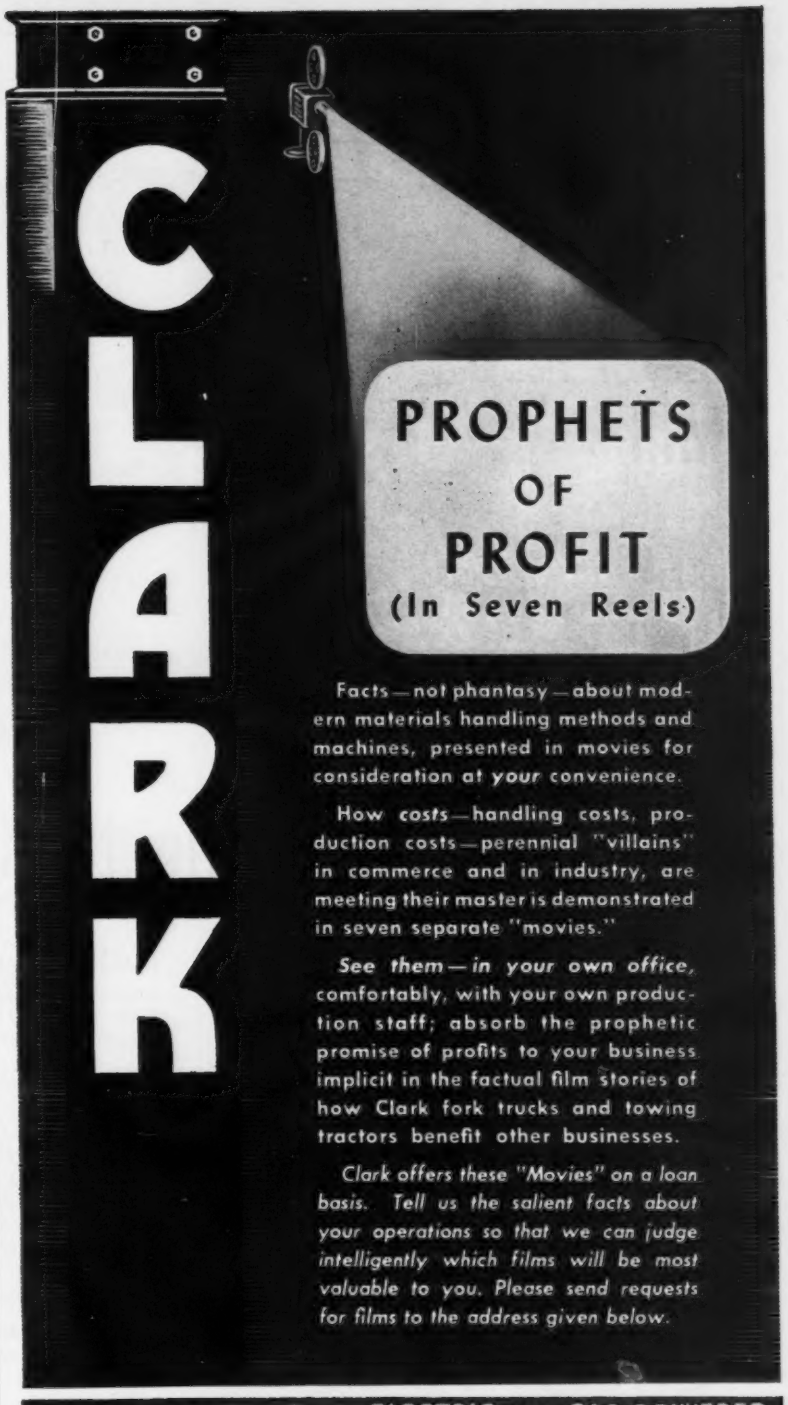
Staley Wins An Oscar

NEW YORK—The forty-second annual report of A. E. Staley Mfg. Co., Decatur, Ill., has been judged the best 1947 report to stockholders and employees in the milling industry by the *Financial World* Annual Report Survey.

A bronze "Oscar of Industry" will be presented to Staley's at the Annual Awards Banquet in the Grand Ballroom of the Hotel Pennsylvania in New York, October 21. Treasurer Ray S. Bass will accept the award in the absence of A. E. Staley, Jr., president and chairman of the board, who is on leave as chief of the ECA mission to Norway.

Used Equipment Bulletin

CHICAGO — McCall & Bond, 7070 North Clark street, sales agents, brokers, and manufacturer's representatives handling chemical plant equipment, are offering a clearing house service to paper mills for the disposal of surplus and saleable used equipment. This service consists of a Bulletin mailed regularly and without charge, listing the items to be disposed of. In the event of a sale, a brokerage fee is the only expense involved.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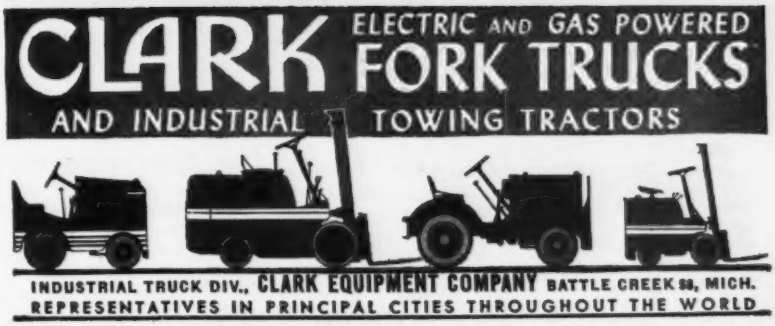
Clark offers these "Movies" on a loan basis. Tell us the salient facts about your operations so that we can judge intelligently which films will be most valuable to you. Please send requests for films to the address given below.

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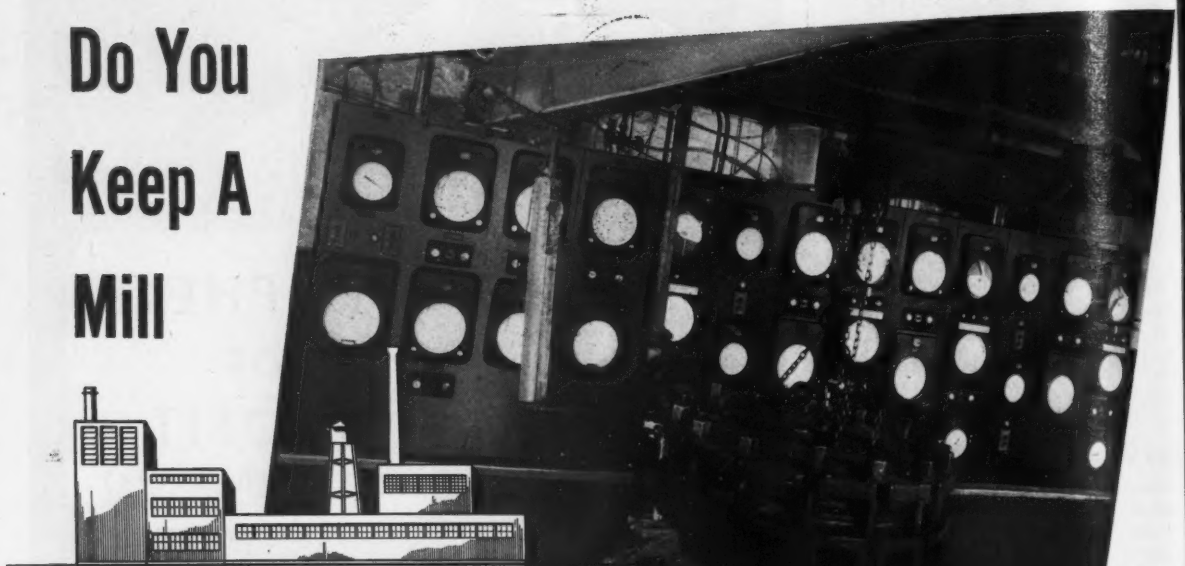
How Do You Keep A Mill



Automatic control system showing Bristol's Time-Temperature and Pressure Controllers on sulphite digesters.

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- Time-Pressure Control
- Relief Control
- Steam Flow Record and Control

PULP WASHERS
- Blow Tank Consistency
- Stock Flow Control
- Tank Level Control
- Shower Flowmeters

RECOVERY PLANT
- Black Liquor Flow
- Green Liquor Baume Control
- Dissolving Tank Level Control
- Liquor Storage Level

EVAPORATORS
- Liquor Flow Control
- Steam Pressure Control
- Temperature Recorders
- Steam Flow

CAUSTICIZING PLANT
- Green Liquor Flow Control
- Heater Temperature Control
- Tank Level Recorders

LIME KILN
- Hot End Temperature Control
- Draft Control
- Oil Flow Record

THE BRISTOL COMPANY, 148 Bristol Road, Waterbury 91, Conn. (The Bristol Co. of Canada Ltd., Toronto, Ontario, Bristol's Instrument Co. Ltd., London N. W. 10, England) West Coast: Branch Factory—40 Berry St., San Francisco 7, Cal. Branch Office—White Building, Seattle 1, Washington. Lake Region: Branch Factory & Office—351 East Ohio St., Chicago 11, Ill. Southern States: Branch Office—Comer Building, Birmingham 3, Alabama.

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AUTOMATIC RECORDING AND CONTROLLING INSTRUMENTS

Brightness Determination of Paper Clays

By N. Millman

Technical Director, Clay Division, J. M. Huber Corp., New York City

Introduction

Many white or nearly white pigments such as paper clay are sold under specifications which include brightness. In some cases, a visual comparison with a standard is adequate, but usually definite measurements with photoelectric instruments are required. Instrument measurements show brightness differences which are too close for visual comparison. Measurements of the total reflectance of white light to an accuracy within a fraction of a per cent is possible only when the specimen is prepared with considerable care, as differences in the preparation of the sample can cause considerable discrepancy between measurements on the same substance in different laboratories. It is the purpose of this paper to point out the influence of various factors on reflectance and to describe a method which makes possible the preparation of uniform specimens for the determination of brightness.

The light reflecting nature of a surface is determined to a considerable extent by the measurement of gloss and brightness. Gloss is determined by the amount of light which is reflected from the surface at the angle of incidence and requires a surface sufficiently smooth to minimize light scattering. Brightness depends upon the amount of scattered light reflected from the material and is usually measured in a direction perpendicular to the surface.

Reflection depends upon the amount and type of surface. Light both reflects from and penetrates surfaces. It may penetrate the top crystals and be partially reflected from their lower surfaces or it may continue to penetrate through a series of underlying crystals. However, light which is reflected from buried crystals must again pass through overlying crystals which tend to reflect a portion of the light back into the body of the material or outward at an angle other than vertical. Hence, much of the light which penetrates below the surface is lost by diffusion and absorption. Coarse crystals present less surface for a given weight of material and will produce less reflection. Moreover, coarse particles promote deeper penetration of light and, therefore, greater absorption. It follows that the construction of the surface will materially affect brightness. The brightest pigment will naturally be one which reflects all of the light from the top surface.

Reflection also depends upon the difference in refractive indices of the crystal and the material which contacts its surface. A pigment may be quite white in air but almost invisible in a medium such as oil which has a refractive index more nearly that of the pigment. Likewise, casein, starch or other adhesives in contact with the pigment particles will tend to decrease reflection. Calendering of coated paper tends to reduce brightness since it promotes better contact of pigment and adhesive, although it may contribute to the smoothness of the surface and increase gloss.

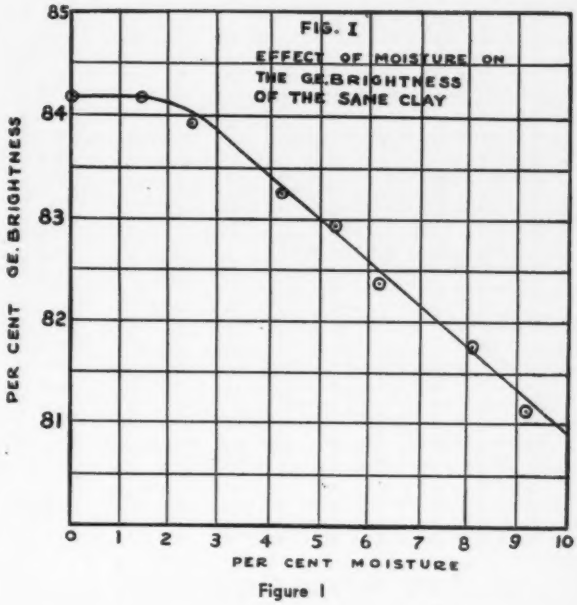


Figure 1

For similar reasons moisture will decrease brightness. Water has a refractive index between that of air and clay, and, if present as part of the interface, will reduce reflection.

It becomes apparent that a brightness evaluation will be greatly affected by the preparation of the sample. The surface to be tested must be prepared in a standardized manner in order that as much reflection as possible is obtained from the top surface. Clays composed of a mixture of lumps and fines cannot be expected to form a surface which is reproducible since it is irregular and allows an indefinite portion of the light to immediately penetrate below the surface. It follows, therefore, that any test procedure for the preparation of the clay specimen must include a standardization of the degree of comminution, moisture and the pressure required to compact the clay into a firm and smooth surface for testing.

G. E. Reflection Meter

Clay brightness is generally determined with the General Electric Reflection Meter, an instrument well known to the paper industry. The instrument is designed to measure the "brightness" or reflectance of white or nearly white pigments to blue light. The results are obtained as percentage reflectances in terms of magnesium carbonate. Generally, the reflectance determination is

1. Suprex Clay, Published by J. M. Huber Corp., 342 Madison Ave., New York, N. Y., 21-23.

made at an effective wave length of 458 millimicrons.

The General Electric Reflection Meter is supplied by the Institute of Paper Chemistry, Appleton, Wisconsin.

TABLE I

Effect of Comminution on the Brightness of Various Clays Dried at 105°C.

Degree of Comminution	% G.E. *Brightness*
1. *Lump Clay*	
Crushed in mortar	82.0
Crushed in mortar and brushed through 60 mesh screen	82.8
Crushed in mortar and brushed through 100 mesh screen	83.2
Crushed in mortar and brushed through 150 mesh screen	83.9
Crushed in mortar and brushed through 200 mesh screen	84.2
Crushed in mortar and brushed through 325 mesh screen	84.3
Pulverized in Raymond laboratory mill*—Coarse screen	84.3
Pulverized in Raymond laboratory mill*—Medium screen	84.6
Pulverized in Raymond laboratory mill*—Fine screen	84.8
2. *Pulverized Water Washed Clay Composed of a Mixture of Fine Powder and Small Agglomerates*	
As received	82.2
Brushed through 100 mesh screen	83.1
Brushed through 200 mesh screen	84.2
Brushed through 325 mesh screen	84.3
3. *Pulverized Water Washed Clay—Fine Powder*	
As received	84.3
Brushed through 100 mesh screen	84.3
Brushed through 200 mesh screen	84.3
Brushed through 325 mesh screen	84.4
4. *Airfloted Clay*	
As received	80.2
Brushed through 100 mesh screen	80.3
Brushed through 200 mesh screen	80.3
Brushed through 325 mesh screen	80.4

* Raymond Pulverizer Division, 1325 North Branch Street, Chicago, Illinois—Bulletin No. 53.

All instruments are calibrated and standardized to give the same reading on the same sample.

Types of Paper Grade Clays

Paper grade clays are currently produced by two methods; the dry process or air-flotation, and the wet process or classification in water suspension. The former is used to produce filler clay and the latter, filler and coating clays.

The dry process involves the pulverizing of dried crude clay and the separation therefrom of coarse impurities, the particles of desirable fineness being lifted from the pulverization chambers by air currents, while the coarse particles are ejected fom the upward steam by whizzer type separators. The finished clay is a fine powder, its brightness depending largely upon the nature of the crude clay.

The wet process deals with clay particles suspended in water. It involves the separation of water suspended clay fractions with controlled particle size ranges, bleaching or whitening by chemical means, filtration and drying.

The wet putty-like filter cake is generally subdivided into small lumps or pellets and these are dried in rotary or tunnel type dryers. In either case, the resulting dried product consists of a mixture of lumps, ranging in size from small agglomerates to about ¾ inches in diameter, and fine material, a varying percentage of which is capable of passing a 100-mesh screen. Often, lump clays are subjected to varying degrees of pulverization so that the resulting products are either fine powders or a mixture of fines and tiny agglomerates.

Occasionally, the filter cake is converted into a liquid slurry by chemical dispersing agents. Drying is accomplished by spraying a thin film of the slurry on heated metallic drums so that the finished dried clay is scraped off in thin small flakes.

Factors Affecting Brightness

Effect of Comminution on Clay Brightness: Because of the diversity in the physical form of currently produced paper clays, it is essential that all clays are accorded a standard method of comminution prior to testing.

The effect of the degree of comminution on the brightness of various types of clays is shown in Table I.

Effective of Moisture on Clay Brightness: The moisture of airfloated clays rarely exceeds 2 percent since crudes must be dried to a low moisture content to facilitate pulverization. However, the moisture of water washed clays generally ranges from 3–8 percent.

Unless a clay is properly dried prior to testing, brightness evaluations are likely to fluctuate over a wide range. The effect of varying moistures on the brightness of a clay is shown in Fig. I. In each case the clay was brushed through a 200-mesh screen.

It will be seen that varying percentages of moisture affect the brightness evaluation on the same clay sample.

Effect of Pressure Used in Forming a Testing Surface on Clay Brightness: The formation of a suitable surface for testing is essential if reproducible brightness results are to be obtained. It is, therefore, important that the clay specimen be subjected to a definite controlled pressure so that a firm disc is formed, having a uniform exposed surface. This is accomplished by compressing a definite weight of the sample into a fixed position at the end of a metal cylinder. (2)

The effect of varying compression on the brightness of the exposed surface is shown in Table II. A dried clay brushed through a 200-mesh screen was used in these experiments.

It will be seen that the highest and more consistent brightness values are obtained at a pressure of approximately 25 lbs., per sq. in., of surface.

It is apparent from the foregoing illustrations that such factors as the degree of comminution, moisture and the pressure used in compressing the clay specimen influence the brightness evaluation.

It has been determined by extensive investigation that the brushing of a dried clay through a 200-mesh screen produces a state of comminution which can be reproduced. The brushing of clays through finer screen is time consuming and does not appreciably change the brightness evaluation. The use of a pulverizer is also time consuming, particularly when a number of different samples are involved. Moreover, unless the pulverization is carefully controlled it may result in a subdivision inconsistent with the fineness of a normally produced clay.

The moisture content of a clay greatly influences the brightness evaluation. For that reason clays should be carefully dried to a moisture content not over 1.5 percent, at a temperature not exceeding 105° C.

A method for the preparation of a clay specimen, embodying a standardization of the factors influencing the brightness evaluation, is described below.

Preparation of Clay Specimen and Brightness Evaluation

Apparatus Required: (1) Smooth glass plate; (2) Brass cylinder, 1⅝" inside diameter and 3" high; (3) A

brass plunger with a solid head 1 9/16" in diameter and 1¼" high, supplied with a knob-type handle 3½" long and about ⅝" in diameter. The total weight of plunger and handle is 1¼ lbs.; (4) Bathroom scales; (5) Small hand brush; (6) 200-mesh screen; and (7) Petri plates.

Preparation of Clay Sample: The preparation of the clay sample, preliminary to the brightness test, depends largely upon the physical form of the clay.

Lump clays are first ground in a mortar to a point where the largest particles are about the size of pinheads. Approximately 25 grams of the ground clay are placed in a petri plate and properly dried at a temperature not exceeding 105° C. The dried material is placed on an inverted 200-mesh screen and 15 grams of clay are brushed through by means of a small hand brush.

Pulverized clays containing tiny agglomerates need not be ground in a mortar but can be dried as received and then brushed through a 200-mesh screen.

Powdered water washed clays generally require a short drying period, whereas airfloated clays are usually of a low enough moisture content so that no further drying is necessary. While screening of powdered clays is an added assurance towards uniformity of results, experiments have shown that there is no appreciable difference in the brightness of screened and unscreened powdered clays.

It should be observed that care should be exercised in the drying of the clay, so that the sample is not subjected to any prolonged drying period beyond the point necessary to dry the clay under 1.5 percent moisture. Excessive drying of the sample after constant weight has been obtained is likely to cause injury to brightness. The time required to attain proper drying with clays of varying moisture content can be easily determined by simple laboratory experiments. For example, 25 grams of lump clay prepared as described above, containing 6 percent moisture, can be properly dried in approximately 20 minutes.

TABLE II

Effect of Pressure in Compacting a Clay Specimen on the Brightness Evaluation and the Uniformity of the Exposed Surface.

Pressure—lbs. per sq. in. of exposed surface	% G.E. Brightness (3 tests were made at different spots on the same surface)		
4.8	Sample crumbles—not enough pressure		
9.6	83.7	83.0	83.4
14.4	84.0	83.7	83.4
19.2	84.1	83.9	84.1
24.0	84.4	84.3	84.4
28.8	84.3	84.3	84.3
33.6	84.5	84.4	84.4
48.0	84.4	84.4	84.3

Preparation of the Clay Disc: The glass plate is placed on the bathroom scales and thoroughly cleaned, making certain that no clay particles or foreign material remain on the surface. The cylinder is then placed on top of the plate and about 15 grams of clay poured inside. With the cylinder held firmly against the plate, the plunger is inserted and allowed to come to rest under its own weight. The plunger is then forced downward by pressure applied at the top of the handle so that the scale reading is about 50-60 lbs. During this operation care is taken not to move the cylinder on the glass plate. At the end of the operation, the plunger is removed and the cylinder lifted from the plate with the clay remaining fixed in the end of the cylinder, care being taken not to rub the clay surface on the plate. Readings are made on several spots of the smooth exposed surface and averaged for final rating.

Duplication of Results

Test 1: A lump water washed clay was first ground in a mortar and then dried. The dried clay was poured into a 60-mesh screen and the fine material sifted by tapping against the sides of the screen. The sifted and retained materials were then brushed through a 200-mesh screen. A brightness determination was made on each clay with the following results:

Clay	*% G. E. Brightness*
Sifted clay	84.2
Retained clay	84.2

Test 2: Sufficient moisture was incorporated in a portion of a ground lump water washed clay, containing 3 percent moisture, so that the wetted clay contained approximately 7 percent moisture. Both clays were properly dried, brushed through a 200-mess screen and tested for brightness. The results are as follows:

% Starting Mosture	*% G. E. Brightness*
3.0	84.3
7.2	84.2

Literature Cited

It has been determined that a clay brightness evaluation depends largely upon the preparation of the clay specimen preliminary to testing. A method capable of reproducible results has been suggested. The method involves a standardization of such factors as the degree of comminution, moisture and the pressure required to compact the clay into suitable surface for testing.

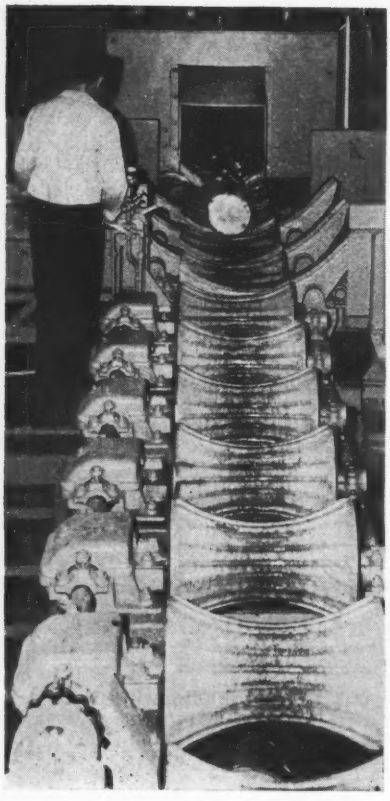
INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this section, makes space available for discussion of administrative and operating problems. Space is also available for the presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and inter-related industries will be included. An invitation is cordially extended to all who are qualified to discuss these subjects. Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.

Scanlon Dam, Lois River, B. C.

Powell River Co. Ltd. Expansion

By F. H. Fullerton



Allis-Chalmers Streambarker

The Powell River Co., Ltd., is well up to schedule on its long-range expansion and development program at its plant at Powell River, B. C. The year 1947 was one of achievement for the company and several of the new installations are reviewed in the following paragraphs.

Hydraulic Barker

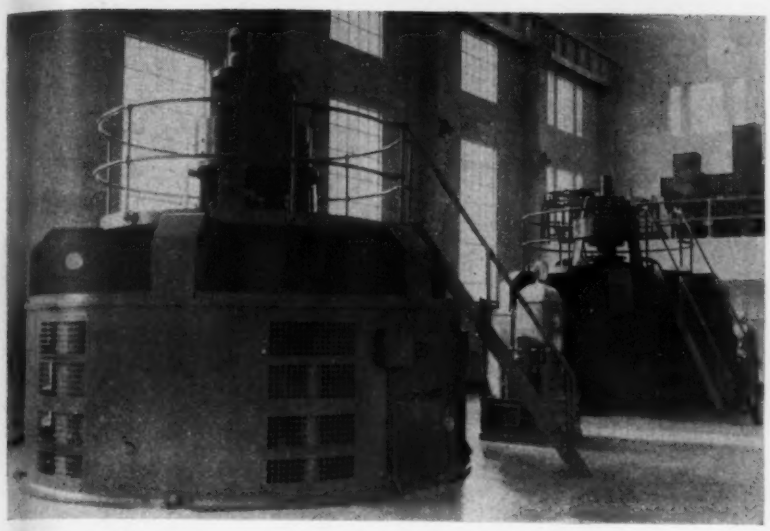
The large Weyerhaeuser type hydraulic barker, the first of its kind to be installed in western Canada, came into operation early in the year. The old method of barking the logs, whereby they were brought into the sawmill, cut into cants, put through the edger, then through the slasher saws, on through the drum barkers, and any blocks remaining put on the hand barkers, was a long and tedious process. A complete departure from this old method, the new barker strips the bark from the logs by high pressure water jet. Pressures of from 900 to 1,200 pounds per square inch are used, depending upon whether the logs are "easy barking" or "hard barking," which is governed by species, spruce being "easy" and hemlock and larch "hard." Actually the high pressures explode the bark by entering the back cells. The logs emerge from the barker completely stripped and then pass on to the sawmill to be cut into blocks for grinding or go into the new whole log chipper which is reviewed in another paragraph. The company estimates that savings from ten percent to 12 percent in wood consumption are effected by the use of the new barker. This means a great deal in the conservation of timber resources.

Small Log Barker

Like its "big brother," the Allis-Chalmers streambarker, which came into operation in July, also strips the bark from the logs by hydraulic pressure. An ingeniously contrived piece of machinery, this installation can handle logs as small as four inches in diameter and up to 15 inches. The use of these smaller logs has been experimented with for some time but until recently the cost of handling and barking made it prohibitive. With the installation of the small log barker much of this high grade pulpwood which had previously been left in the woods because it was not economical to bring it out can now be used.

In the small log barking process the sawmill operation, essential for the large diameter logs, is eliminated. The logs are carried by special conveyor direct from the log pond to the barker, cut into eight-foot lengths by slasher saws and carried direct to the barker. All logs above 12 inches in diameter are, after barking, halved and quartered in the barker mill before being cut into pulp blocks, and from here they are carried direct to the groundwood machines.

With this installation more complete utilization of logging stands can be achieved; and considerable amounts of



Lois powerhouse. New 18,000 KVA hydro-generator in foreground.

the once useless timber lying in logged-over tracts, may be salvaged. This is another step in the Powell River Co. plan for conservation and complete utilization of its timber holdings. However, only spruce and hemlock can be used in the manufacture of pulp and paper and there is a large amount of fir and cedar in this salvage material so that complete utilization can not be made by the pulp and paper industry alone.

Whole Log Chipper

Another important installation in the company's wood preparing division was the whole log chipper which commenced operation in July, 1947. Previously blocks of eight-inch wood about 32 inches long were fed into individual chipping machines. The new operation in one all-embracing swallow consumes an entire 30-inch log 26 feet long and reduces it to small uniform chips in a matter of 30 seconds. There is no waste by way of butt ends and sawing, which means further savings in wood over the year. Logs are sorted in the barker mill and pass by way of conveyors to the chipper down a deeply sloping chute where they come into contact with the chipper — an 11-foot disc on which knives are mounted and which revolves at 250 R.P.M.

Mechanical Block Loaders

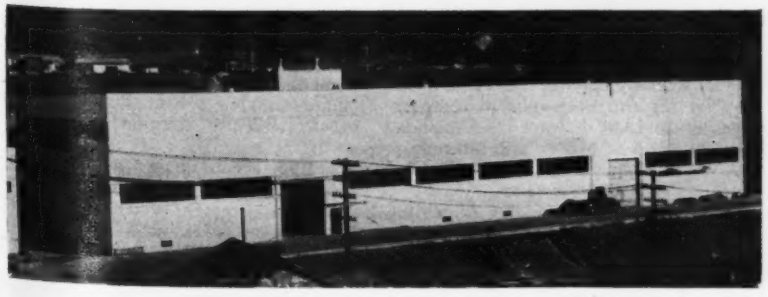
Rounding out the changes in the preparation of its wood, the company installed mechanical block loaders which automatically load the pulp wood blocks onto portable platforms for delivery by Gerlinger carriers direct to the grinding machines. This operation is much faster and more economical than the old system of conveyors and flumes.

Hydro Electric Development

The Scanlon Dam on Lois River was raised to final elevation of 522 feet and a second 18,000 KVA generator was installed in the Lois River powerhouse at Stillwater, B. C., 15 miles south of Powell River. With this new installation the hydroelectric capacity of the company's two power projects at Powell River and Lois River is now 95,000 H.P., sufficient to take care of requirements on completion of the development program.

Pulp Mills

In the groundwood pulp mill a refining system has been completed which saves slivers and coarse particles previously rejected from the system. This equipment and other minor improvements have increased production in the groundwood division.



New building for consolidated mill stores.

In the sulphite process an additional digester has been installed, primarily to take care of increased requirements when the new newsprint machine commences operation.

Also, the technical staffs at Powell River have been able to work out changes which have increased the output of sulphite pulp for sale by approximately ten tons per day.

Plant General

In order to provide prompt and efficient service of parts and equipment to all parts of the plant, a new consolidated mill store has been erected. The new building is 200 by 150 feet, two stories high, of fireproof concrete construction. It is equipped with a 30-ton crane on overhead tracks and a movable five-ton crane. A five-ton capacity elevator connects the two floors and modern shelves and storage bins and rooms are installed throughout.

Several other installations towards modernization and economical operation of the plant have been made, one important improvement being changes in the steam plant which have produced considerable savings in fuel oil consumption. Other improvements are now under way to reduce the consumption of heat in various parts of the process from which a further reduction in the consumption of fuel oil is expected.

In the townsite several small duplex homes were built and a modern lodge to house single men was completed.

1948 Construction Underway

The company is exerting every effort to get the new No. 8 newsprint machine into operation this Fall.

The decision to proceed with the installation of another paper-making machine was made public late in 1946. At the present time, with all major designs completed, the manufacture of the equipment wall advanced, and building construction approaching completion, it is possible to release certain information concerning the project.

The new paper machine will be housed in a building which was partially completed in 1930, when paper machine No. 7 was installed. It will be the same width as No. 7 machine, 226 inches, and will be capable of mechanical operation at speeds up to 2,000 feet per minute, which is 600 feet faster than the older machine. This means one mile of newsprint 226 inches wide every two and one-half minutes. All major improvements developed in the newsprint industry since 1930 will be incorporated in the new machine. Several of these improvements have been developed by the Powell River Co., Ltd., research and operating staffs.

The installation of the new machine is well advanced and unless unforeseen difficulties arise, it is expected that the new machine will be ready for operation this Fall. Modifications of and extensions to other parts of the mill, in anticipation of the increased de-

mands upon them when the machine commences operation, are keeping pace with the paper machine project.

General construction work is being done by the B. C. Bridge & Dredging Co., Ltd., of Vancouver. The paper machine is being built by the Dominion Engineering Works Ltd., of Montreal, while the paper machine drive will be supplied by Bepco (Canada) Ltd., of Westmount, Quebec. Other suppliers are Ross Engineering Co., of Canada, Montreal; the De Laval Steam Turbine Co., of Trenton, N. J.; and the Vancouver Engineering Works Ltd., of Vancouver, who are manufacturing the totally enclosed high-pressure stock inlet. When the eighth machine comes into operation it will boost the company's newsprint production to approximately 257,000 tons per annum.

Two features of the new machine will be the installation of a back-pressure steam turbine, through which all process steam used by the machine will be passed, supplying some 2,500 k.v. additional relatively cheap power to augment the company's hydro power—and the recovery of the hot exhaust air by means of economizers which will heat the incoming fresh air in the ventilating system, and the spray towers which will supply hot water for process purposes.

Groundwood Mill Addition

To provide the additional pulp required when No. 8 newsprint machine goes into operation an addition is being built to the groundwood mill. This involves installation of grinders, washers, screens and thickeners. Good progress is reported on the construction and the job wil be ready to meet production requirements when the machine starts operating.

To take care of sulphite pulp requirements an additional digester has been installed.

High Yield Sulphite Process

Work on an entirely new process of producing sulphite pulp is nearing completion. By a reduction in cooking time, the addition of certain refining equipment and changes in the screening system, it is expected that an increase of 30 percent will be obtained in the pulp produced per thousand feet of logs.

Several other minor improvements are still underway with a view of completely modernizing the plant and processes and producing a completely efficient and economical operation.

Summary of changes made during past year: Added 20 feet in height to Scanlom Dam, 19 miles south of Powell River; completed the hydro-development of this area by installing the second 24,800 H.P. waterwheel and generator; increased production of existing machinery by a general modernization program; constructed a new consolidated mill stores building to centralize the company's stores; placed into operation a small hydraulic barker mill to handle small wood which is uneconomical to bark in the large Weyerhaeuser type barker; added strength digester (12 ton) to the sulphite department; and installed a new paper machine (No. 8) which is expected to start operation this Fall.

Major Equipment & Suppliers

Small hydraulic barker — Streambarker, made by Allis Chalmers Co.; *waterwheel,* Dominion Engineering Works; *generator,* Canadian General Electric Co.; *refiner,* Noblewood Machine Co.; *paper machine,* Dominion Engineering Co.; *Driro,* British Electric Products Co.; *hood and ventilating equipment,* Ross Engineering Co., of Canada; *stock inlet,* Vancouver Engineering Works; *pumps,* De Laval Co., Trenton, N. J.

Approximate cost of the new paper machine is $2,700,000; of other improvements $1,750,000, making total cost of all improvements $4,450,000.

EQUIPMENT AND SUPPLIES

600# Steel Gate Valves

Designated No. 3602XW and 3602X, the union bonnet 600-pound cast-steel gate valves introduce a new line of Crane valves and meet a demand for small, compact valves of this class. They replace discontinued items

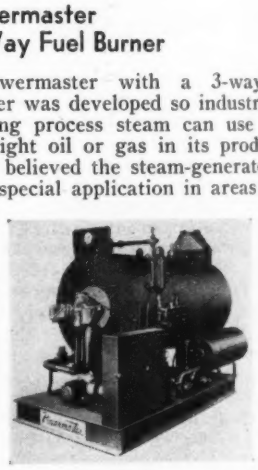
Nos. 3606XW and 3606X. Available in sizes ¼ through 2 inches, with screwed ends and with two kinds of trim. The 3602XW has Exelloy seats and a hardened stainless-steel disc; the 3602X has both seats and disc of Exelloy. In sizes ¾ through 2 inches, bonnet ring, bonnet and yoke are separate parts; from ¼ through ½ inch, these parts are cast integral. Joint between body and bonnet is sealed with soft iron gasket which is unaffected by high temperatures or fluids for which valve is recommended. Valve has an outside screw and yoke. Stuffing box is designed deep enough on valves ¾ inch in size to hold six rings of square packing. Gland is held by two T-head bolts fitted into slots in yoke and can be easily adjusted. XW valves are recommended for superheated or saturated steam, hot or cold water, ordinary air, natural gas, fuel oil, gasoline, low-viscosity oil such as is used for hydraulic systems, butane, propane, and for fluids that are non-lubricating and relatively non-corrosive; top temperature recommendations are 850 degrees F. X-valves are for oil and oil vapor at temperatures up to 1,000 F.; not recommended for steam or other non-lubricating fluids because the Exelloy-to-Exelloy seating faces have a tendency to gall in such service, particularly if seating loads are unusually high. (New line or union bonnet valves does not replace 600-pound small steel bolted-bonnet valves which manufacturer will continue to manufacture). For details and prices write to Crane Co., 836 S. Michigan avenue, Chicago 5, Ill.

Thermoplastic Matting

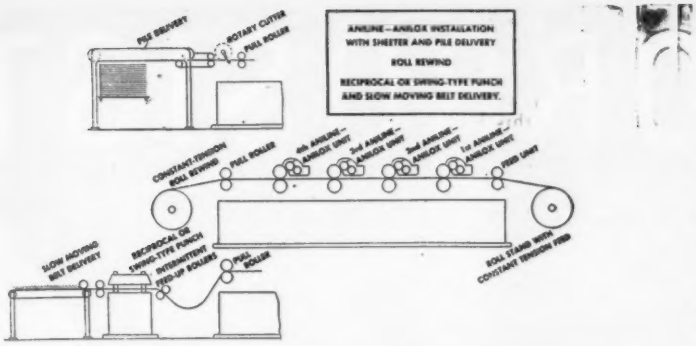
Thermoplastic Matting is designed to provide longer wearing industrial floor-covering with special application to plants where acids or oils have proven destructive to rubber. Said to be abrasion resistive and to withstand rigorous service. Because of its thermoplastic nature, the matting tends to conform to irregular surfaces and contours, to lie flat and hug the floor. Available in black or brown, is 3/32 inches thick by 36 inches wide, supplied in 25- to 35-yard rolls. For details and prices write to B. F. Goodrich Co., Akron, Ohio.

Powermaster 3-Way Fuel Burner

Powermaster with a 3-way fuel burner was developed so industries requiring process steam can use heavy oil, light oil or gas in its production. It is believed the steam-generator will find special application in areas where



"off-peak" gas service rates are in effect or where oil shortages exist. Described as fully automatic, range from 15 to 200 h.p.; burns heavy fuel with same clean combustion as light oil and gas. Featured are modulated control of flame-volume to maintain constant steam pressure, simplified design, free-swinging rear cover to expose tubes for cleaning, air-atomizing burner to promote complete and clean combustion, condensate return system mounted on base for compact installation, safety shut-offs in case of flame failure: electronic fire-eye for oil, flame rod for gas. For details and prices write to Orr & Sembower, Inc., Reading, Pa.

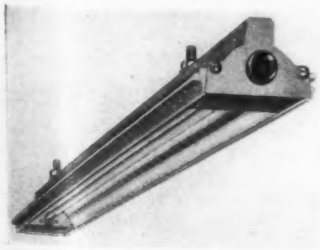


Champlain Aniline Press

The Champlain Aniline Press, developed to solve the problem of varying production and rapid changeover, is designed to deliver printed, die-cut, scored and stripped cartons at speeds to 600 feet per minute. Available in three types of delivery: roll rewind, sheet and carton-blanked with slow-moving belt delivery. Roll-fed web is of straight-through type and at waist level, affording constant view of all operations. Manufacturer states that any number of colors can be printed on one or both sides of the web in a matter of seconds and over the minimum - maximum range of web size, also that varnishing can be done in the same operation. Single throw-off is designed to release printing cylinder from both impression and inking rollers when a plate change is necessary. Push-button register control is standard although automatic electronic control may be provided. In either case, 360 degree running register results. It is stated that the unit may be used to advantage for spotting or strike-in in combination with rotogravure. For details and prices write to Champlain Co., 88 Llewellyn avenue, Bloomfield, N. J.

Electric Radiant Heaters

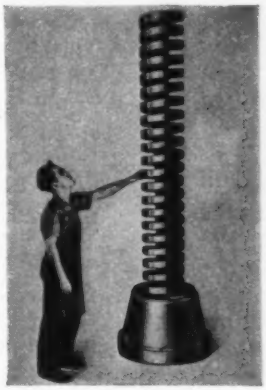
Chromalax Electric Radiant Heaters are described as glassless, glareless heaters for drying, baking, preheating and dehydrating where a longer-wave



infrared heat source is desired and where rugged all-metal construction is preferable. Body is made of rigid, extruded aluminum with reflector sheet of highly polished Alzaked aluminum. High-temperature, enclosed type of Chromalox heating elements are mounted at the focus of a parabolic reflecting surface, which is said to result in maximum heat radiation uniformly distributed. Glassless construction was designed to permit an unobstructed, unfiltered path of infrared radiation of the longer wave lengths. Interlocking and sliding-bolt features provide maximum flexibility in fabricating groups of heaters into patterns for infrared application. Assemblies are four inches in depth so that heat source can be brought closer to the work. Available in standard body lengths of 25, 31 and 47-inches, with respective heated lengths of elements 17, 23 and 29-inches. Other lengths and various wattages can be supplied to meet requirements. For prices and details write to Edwin L. Wiegand Co., 7500 Thomas boulevard, Pittsburgh 8, Pa.

Vertical Spiral Feeder

The Vibratory Vertical Spiral Feeder is designed to provide a means of elevating or lowering various types of bulk materials — foodstuffs, chemicals, etc.—without use of buckets, sprockets, gear, chains and motors. Syntron con-



trolled vibration applied to a spiral elevating ramp causes the material to flow up and around the ramp at rates controllable by rheostat or reactor provided with each unit. Available in limited heights and diameters for operation from 110, 220 or 440 volt a.c. Maximum tonnage required determines of the spiral ramp. For details and prices write to Syntron Co., 587 Lexington avenue, Homer City, Pa.

Typee Turbine

The Typee is announced as an all-weather general purpose turbine for driving industrial pumps, fans, blowers, compressors, paper machinery and small generators. Combination felt and labyrinth bearing seals are designed to protect the turbine's lubricating system from contamination so that neither torrential rain nor the presence of abrasive dust will affect its operation. Corrosion-resistant materials are said to be liberally used throughout. Basic turbine is equipped with a shaft-type governor mounted in rugged casing to protect the governor assembly and shaft end. An overspeed trip simultaneously closes the governor valve and a heavy butterfly valve at a predetermined speed. Improved free-expansion center line support is arranged so that pipeline reaction is transmitted to the foundation. For details and prices write to Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

Tape Sealing Machine

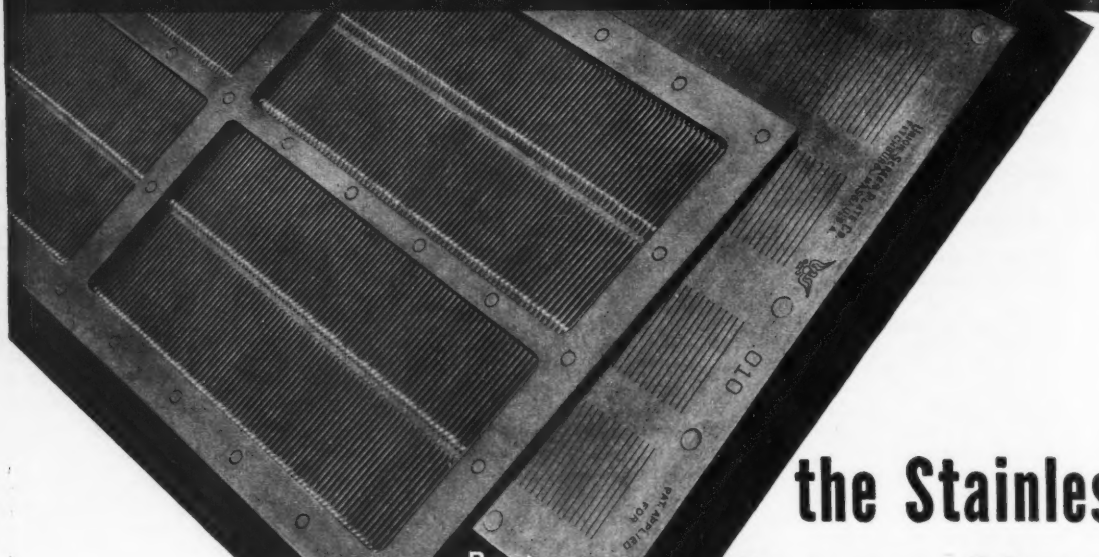
Lake Tape-Sealing Machine was developed for applying standard pressure (masking) tape to drums, roll goods, canisters, cartons, etc., on a production basis. Self-automatic, it is said to have reduced manual tape sealing time by

as much as 400 percent. Packages up to 17 inches diameter are placed between adjustable spring clamps. One complete hand revolution of swivel arm feeds the tape evenly and neatly to the package. Tape is cut by a blade. Swivel arm is available in any height to 28 inches and is mounted in an oilless bearing. Unit weight legend 40 pounds. For details and prices write to Lake Laboratories Co., Clifton Heights, Pa.

Center-Control Fork Truck

Type FRH-20 Fork Truck finds application wherever narrow aisles, congested areas, small and low capacity elevators are a factor and where loads can be limited to 2000 pounds, 36 inches long. For details and prices write to Baker-Raulang Co., 2168 West 25th street. Cleveland, Ohio.

✻ CORROSIST



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CONSTRUCTION: (See photo)

A. FRAME—Butt-welded Monel bars form an amazingly stiff back-bone, reduce flexing.

B. PLATE—⅛″ Stainless steel, milled and sawed. Slot "breathing" held to the minimum.

C. RIVETS—Inconel for toughness, set home under 5 tons pressure per rivet.

STANDARDS:

CUT: 4, 5, 6 and 8 slots per inch.

SLOT: Cut .008″ and larger.

STYLE: C only.

LENGTH: 43″ and 42″.

THICKNESS: ⅜″ only.

WIDTH: 12″ drilled and 10¾″ Witham beveled.

*TRADE-MARK REG. U. S. PAT. OFF.

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FITCHBURG, MASSACHUSETTS

SECTION OF THE

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OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Nitration of Wood Pulp*

Influence of the Physical Condition of Pulp and of the Species of Wood

By Milton O. Schur[1] and Douglas H. McMurtrie[2]

Published In Two Parts — Part I.

Abstract

The huge demands of our armed forces for smokeless powder during World War II were satisfied on a wood pulp basis.

Data obtained in the examination of a variety of coniferous wood pulps indicate that the behavior of a pulp in the acid wringer and of the beaten nitrocellulose in the poacher can be predicted from a determination of the number of fibers of pulp per unit volume of test sheet: the lower the number, the more suitable the pulp.

The beaten nitrocelluloses lend themselves more readily to dehydration in the press the lower the number of fibers per gram of unnitrated pulp.

Acid retention and rate of settling of beaten nitrocellulose are favorably affected if, in the purification of the wood pulp, sufficiently strong solutions of caustic soda are used to reduce the packing tendency of the fibers.

Until World War I, the United States fought its wars with black powder, then turned to the use of smokeless propellant, manufactured from cotton linters. Because of the ease with which it can be purified and because of its adaptability to the purpose, cotton had long previously been adopted by the world at large as the standard cellulosic raw material in the manufacture of propellant powders *(1, 2, 3)*. The Germans, however, are said to have been forced during World War I by the effective Allied blockade to resort to the use of wood cellulose, probably in the form of crepe tissue paper *(4, 5)*, and in 1918, the duPont Company, in an experiment, successfully manufactured 50 tons of 3-inch field-gun powder from a mixture of equal parts of wood pulp and cotton linters *(6)*.

Not long after the close of World War I, Brown Company pioneered the commercial production of a variety of highly purified wood pulps *(7, 8)*, the first of which were designed for the rayon industry, the next for the manufacturers of papers of high permanence, and still others for conversion into cellulose derivatives, particularly nitrocellulose *(3)*. At about the same time, the American nitrating industry intensified its study of the potentialities of wood pulp as a relatively abundant raw material *(9, 10, 11, 12)*. As a consequence, during World War II the huge demands of our armed forces for smokeless powder could be safely satisfied to a great extent on a wood pulp basis *(13, 14)*.

In the United States and in Canada, wood pulp in the form of small chips of split or flaked drier board was nitrated by the mechanical dipper process for conversion into smokeless powder *(10, 14, 15, 16, 17)*. In Canada, wood pulp was nitrated also as specially prepared shreds by the Thomson displacement process for conversion into cordite *(18)*.

Among the important variables that influence quality of nitrocellulose, cost, and smoothness of operation are the form, or physical condition, of the cellulose at the time of nitration *(3, 19, 20)*, and the species of wood from which the pulp has been liberated. Experiments demonstrating the importance of both variables are described below.

Effect of Physical Condition of Wood Pulp

A. Dipper Process

In Tables I to IV, inclusive, are given typical results of laboratory pot nitrations made with Brown Company, Weyerhaeuser, and Fernandina B-Grade nitrating wood pulps *(21)*, and, for purposes of comparison, with a nitration-grade of cotton linters. The pulps were nitrated in several different forms: (a) as fluff prepared by disintegration of drier board containing about 6% moisture with a rapidly rotating star-shaped metal plate; (b) as shreds made with the same disintegrator according to a Brown Company process in which drier board is previously moistened so as to contain equal weights of water and fiber *(22)*; and (c) as split or flaked chips of drier board prepared under commercial conditions in a machine developed by the Hercules Powder Company *(10)*. All samples, before nitration in the laboratory, were oven-dried at 100°C. In all cases the ratio of nitrating acid to fiber was 38.0 to 1.00 by weight; the temperature at the start of nitration was 34°C.; the per cent HNO_3 in the nitrating acid was 26.0%; the per cent total acid in the nitration mixture was as shown in the Tables I to IV; the total time of nitration was 22 minutes. A description of the laboratory centrifuge used to remove spent acid from the nitrated fibers is given elsewhere *(3)*; the time of centrifuging was 1 minute.

The nitrocelluloses, immediately after being centri-

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Member TAPPI; Technical Director, Ecusta Paper Corporation, Pisgah Forest, North Carolina; formerly Director of Research and Development, Brown Company, Berlin, N. H.

[2] Chief of Pulp Division, Research and Development Department, Brown Company, Berlin, N. H.

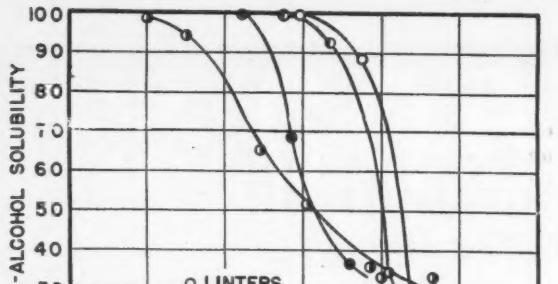

FIG. 1

Brown Co. Nitrating Pulp and Cotton Linters Ether-Alcohol Solubility of Samples Nitrated to Various Nitrogen Contents

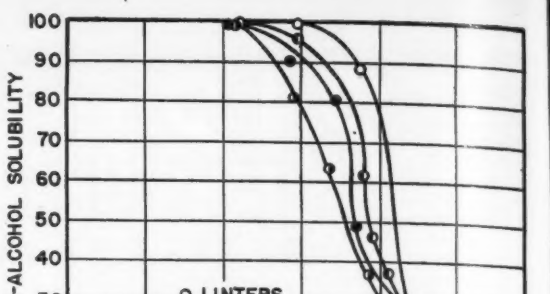

FIG. 2

Fernandina Nitrating Pulp and Cotton Linters Ether-Alcohol Solubility of Samples Nitrated to Various Nitrogen Contents

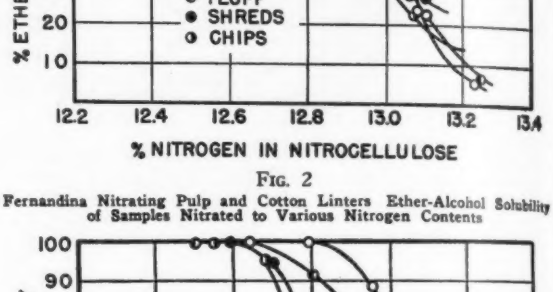

FIG. 3

Weyerhaeuser Nitrating Pulp and Cotton Linters Ether-Alcohol Solubility of Samples Nitrated to Various Nitrogen Contents

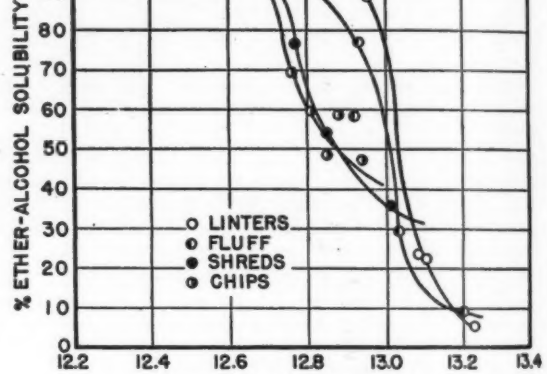

FIG. 4

Brown Co. Nitrating Pulp and Cotton Linters % Nitrogen Content of Nitrocellulose Obtained with Nitrating Acids of Various Total Acid Content

fuged, were steeped in a large volume of water at temperature of about 20°C., drained on nainsook, then were washed on the cloth with distilled water under standardized conditions. They were now stabilized by means of a number of boilings in water, the first of which were under mildly acid conditions, the last under mildly alkaline conditions.

In Figs. 1 to 3, inclusive, are shown ether-alcohol solubilities plotted against nitrogen content of the nitrocelluloses. It is evident that the curve for cotton linters was approached most closely by the curves for the wood pulps fluffed dry, least by the curves for the split and flaked chips of drier board. Also apparent is the fact that the extent of deviation of the solubility curves for the nitrated wood pulps from the curve for the nitrated cotton linters was different for the different pulps.

Because of the markedly heterogeneous make-up of the chipped drier board, the chips and flakes varying widely in thickness and being accompanied by much fluff and fly, it was to be anticipated that the chipped and flaked wood pulp would yield ether-alcohol solubility curves considerably divergent from the curve for cotton linters. According to Heuser, the solubility of nitrocellulose depends mainly upon the average degree of polymerization and upon the nitrogen content *(23)*. On this basis, further examination of the ether-alcohol solutions would be expected to disclose that the smallest variation in degree of polymerization and in nitrogen content within any of the various samples of nitrocellulose had been realized with the fibrous materials of most uniform physical condition, namely, the cotton linters and the wood pulps fluffed dry, and similarly, that the widest ranges had been realized with the raw material of least uniformity, namely, the chipped wood pulp.

Other interesting comparisons are shown in Fig. 4 to 13, inclusive, the data for which were also taken from Tables I to IV, inclusive. Thus, from Fig. 4 to 6, it is apparent that cotton linters, when nitrated with mixed acid containing 26.0% HNO_3 and a given percentage of total acid, yielded nitrocellulose of a higher nitrogen content, under the conditions of nitration employed, than did any of the wood pulp samples, with the exception of fluffed Brown Company nitrating pulp, which equaled it in this respect. On the other hand, Brown Company pulp in the form of the chipped drier board required about 1.0% higher total acid content for the attainment of a given nitrogen content over the range studied. The same pulp shredded at 50% moisture content and then redried, required an intermediate total acid content.

Fernandina nitrating pulp, whether in the form of fluff, shreds, or chips, required a total acid content about ¼% higher than did cotton linters for the attainment of a given nitrogen content.

Weyerhaeuser nitrating pulp, with respect to the

TABLE I.—SMOKELESS GRADE LINTERS

Total Acid in Nitrating Acid, %	Initial Temp. Increase, C.°	Nitrogen in Nitrocellulose, %	% of Theoretical Yield	Ether-Alcohol Solubility, %	Acetone Viscosity, poises	Acid Retained in Centrifuge, lb./lb. nitrocellulose
83.8	4.0	12.27	100.2	...	..	1.07
84.5	4.0	12.64	98.0	99.8	33	1.02
85.0	4.0	12.79	98.0	99.8	39	1.00
85.5	4.5	12.95	96.9	88.5	39	0.94
85.7	5.0	13.10	97.7	22.4	41	0.98
86.0	5.0	13.08	96.9	23.7	41	0.89
86.6	4.5	13.23	97.4	5.5	47	0.90

nitrogen content attained, behaved more like Brown Company pulp, except that the fluffed samples required a total acid content about ¼% higher than did cotton linters.

From Fig. 7, it is apparent that the three brands of wood pulp, Brown Company, Fernandina, and Weyerhaeuser, when nitrated in the form of the Brown Company shreds, i.e., shreds prepared from dried board containing equal weights of fiber and water, required, on the average, slightly different total acid contents for the attainment of a given nitrogen content, within the limits of precision of the laboratory nitrations and under the conditions of nitration employed. Thus, Brown Company pulp required a per cent total acid in the nitrating medium about 0.6% higher, Weyerhaeuser pulp about 0.4% higher, and Fernandina about 0.2% higher than did cotton linters.

Besides solubility and nitrogen content of the nitrocelluloses, two other important factors, more directly concerned with cost, remain to be discussed on the basis of the data in Tables I to IV. These factors are acid retention and per cent of theoretical yield, the former ordinarily expressed as pounds of spent acid retained in the acid-separating centrifuge per pound of nitrocellulose, the latter as per cent of the theoretically perfect yield of nitrocellulose attained according to the nitrogen content of the nitrocellulose.

As seen from Fig. 8, 9, and 10, cotton linters, of the materials studied, retained the least acid in the centrifuge. Wood pulp came closest to cotton linters in acid retention when nitrated in the form of shreds prepared from pulp containing 50% moisture. On the other hand, wood pulp as Hercules chips or as fluff was much more wasteful of spent acid, especially in the case of the Brown Company pulp.

With regard to yield of nitrocellulose, it is apparent from Fig. 11, 12, and 13 that the highest values were realized with cotton linters, that the wood pulps in the form of fluff or of the specially prepared shreds gave yields from about 1% lower (Weyerhaeuser pulp) to about 2½% lower (Fernandina pulp), and that pulp in the form of Hercules chips gave yields from about 3½% lower (Weyerhaeuser) to about 5½% lower (Brown Company) than did cotton linters.

Thus, of the three forms of wood pulp studied, Brown Company shreds offered the most advantageous combination of yield, acid retention and requirement of total acid content in the nitrating medium. The shreds possessed two additional advantages: they were relatively free from fly and they submerged readily in mixed acid. The dry fluff, on the other hand, was exceedingly dusty and tended to float on the acid; hence, it was

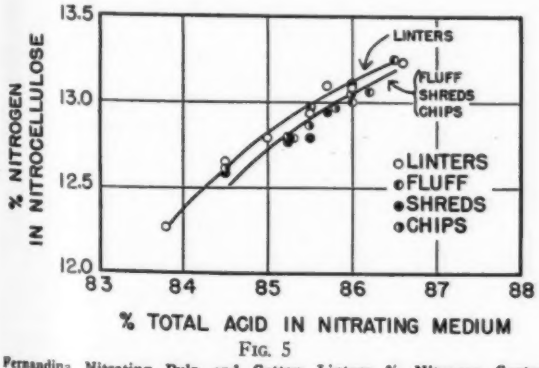

FIG. 5

Fernandina Nitrating Pulp and Cotton Linters % Nitrogen Content of Nitrocellulose Obtained with Nitrating Acids of Various Total Acid Content

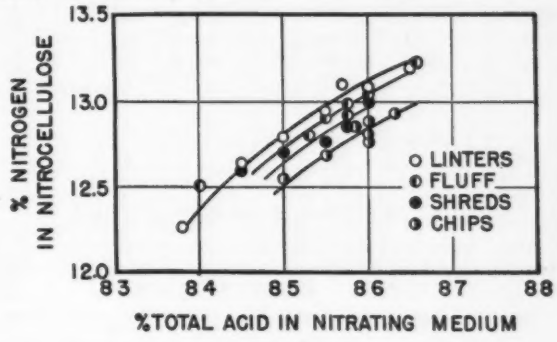

FIG. 6

Weyerhaeuser Nitrating Pulp and Cotton Linters % Nitrogen Content of Nitrocellulose Obtained with Nitrating Acids of Various Total Acid Content

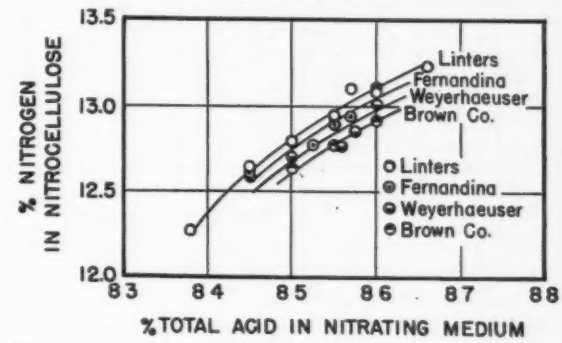

FIG. 7

Comparison of Linters, Brown Co., Fernandina, and Weyerhaeuser Shredded Pulps Nitrated with Nitrating Acids of Various Total Acid Content

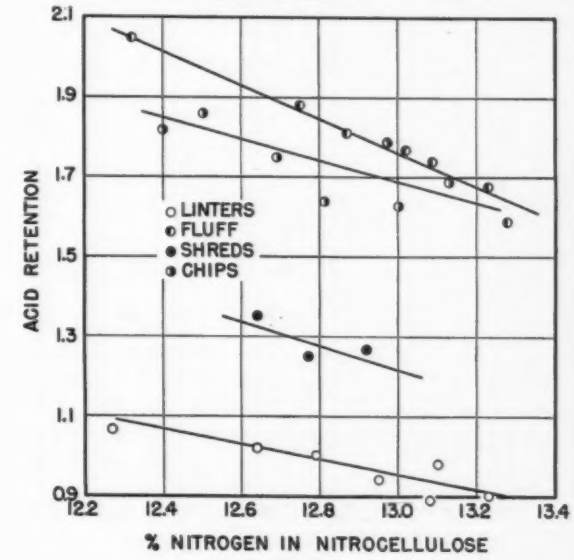

FIG. 8

Brown Co. Nitrating Pulp and Cotton Linters Variation in Acid Retention with % Nitrogen in Nitrocellulose

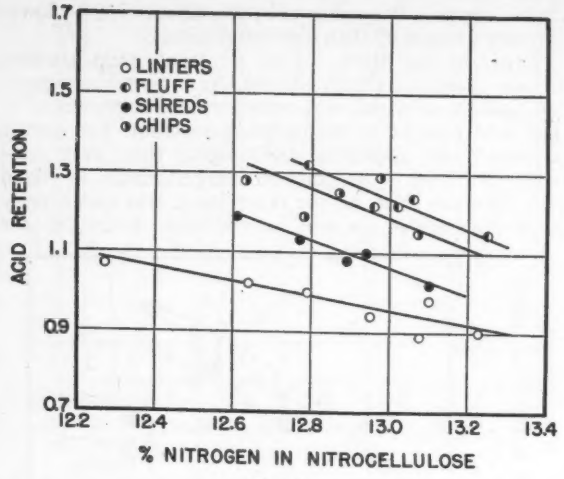

FIG. 9

Fernandina Nitrating Pulp and Cotton Linters Variation in Acid Retention with % Nitrogen in Nitrocellulose

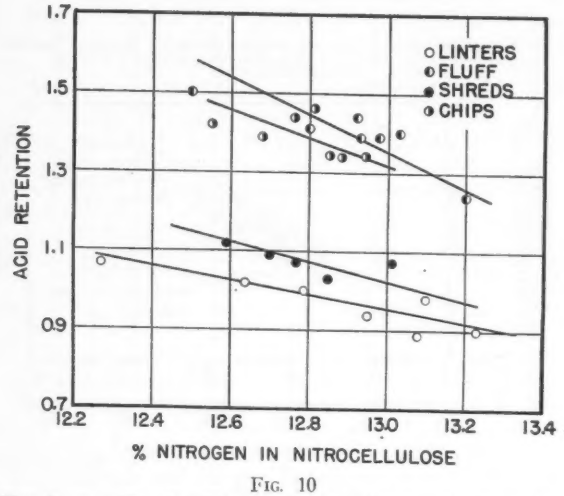

FIG. 10

Weyerhaeuser Nitrating Pulp and Cotton Linters Variation in Acid Retention with % Nitrogen in Nitrocellulose

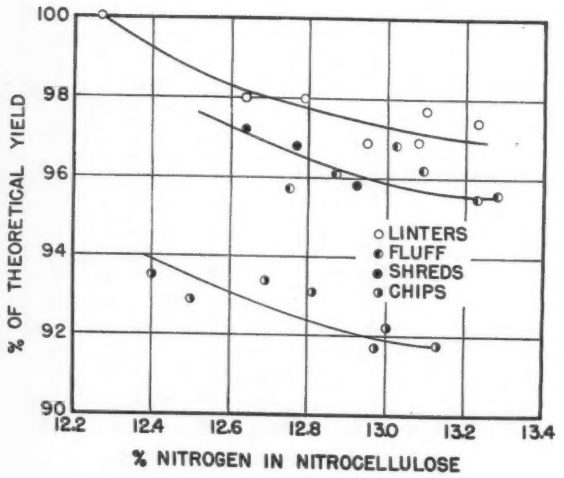

FIG. 11

Brown Co. Nitrating Pulp and Cotton Linters % of Theoretical Yield Realized in Preparation of Nitrocelluloses of Various Nitrogen Content

TABLE II.—BROWN COMPANY NITRATING PULP (60% SPRUCE, 40% BALSAM FIR)

Fluffed Dry

Total Acid in Nitrating Acid, %	Initial Temp. Increase, C.°	Nitrogen in Nitrocellulose, %	% of Theoretical Yield	Ether-Alcohol Solubility, %	Acetone Viscosity, poises	Acid Retained in Centrifuge, lb./lb. nitrocellulose
84.0	...	12.32	...	...	..	2.05
84.5	4.0	12.75	95.7	99.7	38	1.88
85 0	4.0	12.87	96.1	92.6	47	1.81
85.3	...	12.78	...	...	..	...
85.5	5.0	13.02	96.8	34.6	35	1.77
86.0	5.0	13.09	96.2	20.3	38	1.74
86.5	5.0	13.23	95.5	10.2	44	1.68
87.0	5.0	13.28	95.6	9.8	49	1.59
		Shredded at 50% Moisture Content				
85.0	...	12.64	97.2	99.7	33	1.35
85.5	4.0	12.77	96.8	67.3	32	1.25
86.0	4.5	12.92	95.8	36.9	39	1.27
		Chipped Drier Board				
85.0	4.0	12.40	93.5	98.6	15	1.82
85.0	3.5	12.50	92.9	94.3	14	1.86
85.5	4.5	12.69	93.4	65.2	12	1.75
86.0	4.0	12.81	93.1	51.8	13	1.64
86.5	4.0	12.97	91.7	36.0	13	1.79
87.0	4.0	13.00	92.2	33.3	16	1.63
87.5	4.0	13.13	91.8	31.7	18	1.69

much more liable to give rise to pot fires. Hercules chips, which gave the lowest yield associated with relatively high acid retention, also were dusty, i.e., they contained much fly.

B. Thomson Displacement Process

The advantages in the Brown Company type of shred were found to extend to the Thomson process of nitration *(24)*.

In 1940-41, Brown Corporation of Canada cooperated with Defence Industries, Ltd., a wholly owned subsidiary of Canadian Industries, Ltd., in the adaptation of purified Canadian wood pulp to the manufacture of cordite by the Thomson displacement method *(18)*. Cordite is a blend of nitrocellulose of nitrogen content 13.1% with nitroglycerine *(25)*. In this work, it was found that wood pulp in the form either of dry fluff or of chipped and split fragments of pulp board gave poor results. The dry fluff tended to float on the surface of the nitrating acid, and its excessive bulk interfered dangerously with the loading of the pans. The chips, because of their relatively dense, nonhomogeneous character (especially in the case of Northeastern pulps), showed insufficient reactivity in the displacement process. On the other hand, wood pulp shredded at 50% moisture content by the Brown Company method, gave excellent results. With these shreds, the total charging time was no greater than for cotton linters; the ratio of weight of acid to weight of fiber was normal (Fig. 14); displacement of acid with ice water proceeded without unusual incident; acid re-

TABLE III.—FERNANDINA NITRATING PULP (CONTAINING SOUTHERN PINES)

Fluffed Dry

Total Acid in Nitrating Acid, %	Initial Temp. Increase, C.°	Nitrogen in Nitrocellulose, %	% of Theoretical Yield	Ether-Alcohol Solubility, %	Acetone Viscosity, poises	Acid Retained in Centrifuge, lb./lb. nitrocellulose
85.3	4.5	12.79	95.9	96.0	62	1.32
85.5	5.0	12.96	95.1	61.9	60	1.22
86.0	5.5	13.02	94.5	36.9	68	1.22
86.2	5.5	13.06	95.1	27.3	52	1.24
86.5	5.5	13.25	94.8	6.9	71	1.15
		Shredded at 50% Moisture Content				
84.5	4.5	12.61	94.9	99.4	30	1.19
85.25	5.0	12.77	95.2	90.2	42	1.13
85.5	4.0	12.89	95.7	80.3	44	1.08
85.7	5.5	12.94	94.4	48.8	48	1.10
86.0	4.5	13.10	95.4	26.9	62	1.02
		Chipped Drier Board				
84.5	4.5	12.63	94.1	99.2	51	1.28
85.3	4.5	12.78	93.2	81.0	52	1.29
85.5	5.0	12.87	92.5	63.4	59	1.25
85.8	4.0	12.97	92.0	36.6	55	1.29
86.0	5.0	13.07	92.9	22.3	71	1.15

TABLE IV.—WEYERHAEUSER NITRATING PULP (CONTAINING WESTERN HEMLOCK)

Total Acid in Nitrating Acid, %	Initial Temp. Increase, C.°	Nitrogen in Nitrocellulose, %	% of Theoretical Yield	Ether-Alcohol Solubility, %	Acetone Viscosity, poises	Acid Retained in Centrifuge, lb./lb. nitrocellulose
Fluffed Dry						
84.0	4.0	12.50	96.9	99.4	47	1.50
85.3	5.0	12.80	96.3	91.4	33	1.41
85.5	5.0	12.93	96.5	77.0	51	1.39
85.75	5.0	12.92	97.2	58.3	62	1.44
85.75	...	12.98	95.7	46.2	59	1.49
86.0	5.0	13.03	95.5	29.4	50	1.40
86.5	5.5	13.20	97.0	9.2	54	1.24
Shredded at 50% Moisture Content						
84.5	4.0	12.59	96.8	99.4	42	1.12
85.0	4.5	12.70	97.5	94.3	44	1.09
85.5	5.0	12.77	96.6	76.7	44	1.07
85.75	5.5	12.85	96.5	54.0	54	1.03
86.0	4.5	13.01	97.0	35.7	46	1.07
Chipped Drier Board						
85.0	4.5	12.55	94.6	99.4	23	1.42
85.5	3.5	12.68	93.9	95.1	28	1.39
85.75	4.5	12.85	95.0	48.8	31	1.34
86.0	4.0	12.88	94.7	58.9	32	1.34
86.0	4.0	12.76	94.0	69.3	26	1.44
86.0	4.0	12.81	94.6	59.6	33	1.46
86.3	4.5	12.94	94.4	47.3	34	1.34

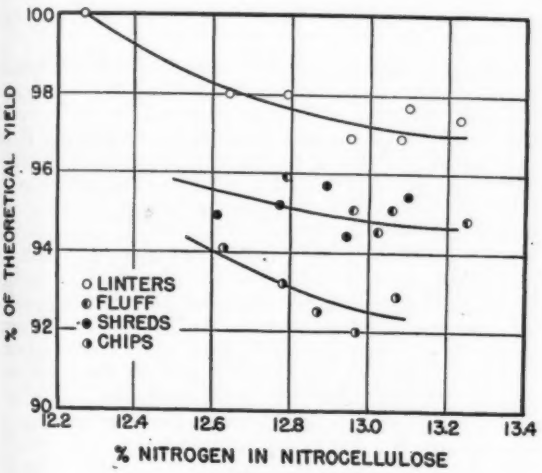

FIG. 12

Fernandina Nitrating Pulp and Cotton Linters % of Theoretical Yield Realized in Preparation of Nitrocelluloses of Various Nitrogen Content

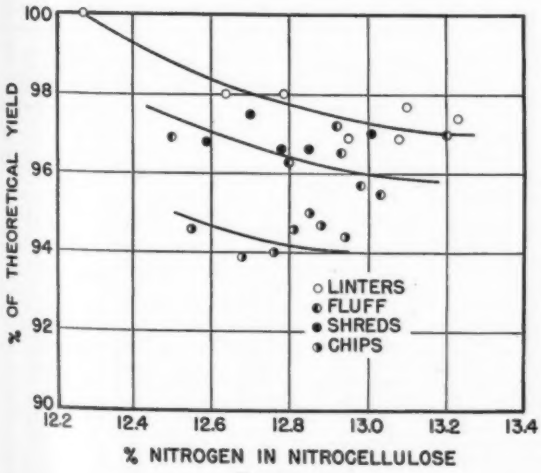

FIG. 13

Weyerhaeuser Nitrating Pulp and Cotton Linters % of Theoretical Yield Realized in Preparation of Nitrocelluloses of Various Nitrogen Content

covery was normal; the nitrogen content of the nitrocellulose after the stabilizing steps was 13.10%, corrected in the usual way for a slight ash content; the stability of the nitrocellulose, as measured by the Bergmann-Junk method, was normal; the ether-alcohol solubility was less than 11%, as desired.

Equipment to produce the shreds on a large scale was designed under the direction of the writers, built, and put into successful industrial operation before the close of 1941. A flow sheet of the shredding process is given elsewhere *(18)*; photographs of the apparatus employed for imparting the proper moisture content to the drier board prior to the shredding step are shown in Figs. 28 and 29.

Effect of Species of Wood

From the data in Tables I to IV, and from the graphs in Fig. 1 to 13, it is apparent that the behavior of the wood pulps during nitration depends only in part upon gross physical form. On the other hand, none of the usual chemical tests made on the pulps will account for the differences in nitrating results among different pulps nitrated in the same physical form. The dissimilarities are, therefore, to be attributed to differences in the physical characteristics of the fibers undergoing nitration.

It was reasoned that acid retention might be related to the number of fibers per gram of pulp: the higher the number of fibers, the more slowly would the cake in the centrifuge part with acid, and therefore the higher the acid retention. Determinations of the number of fibers per gram were made by a method somewhat similar to that described by Graff *(26)* and recorded below in the section on procedures. A graph of the data obtained with the three wood pulps studied, Fig. 15,

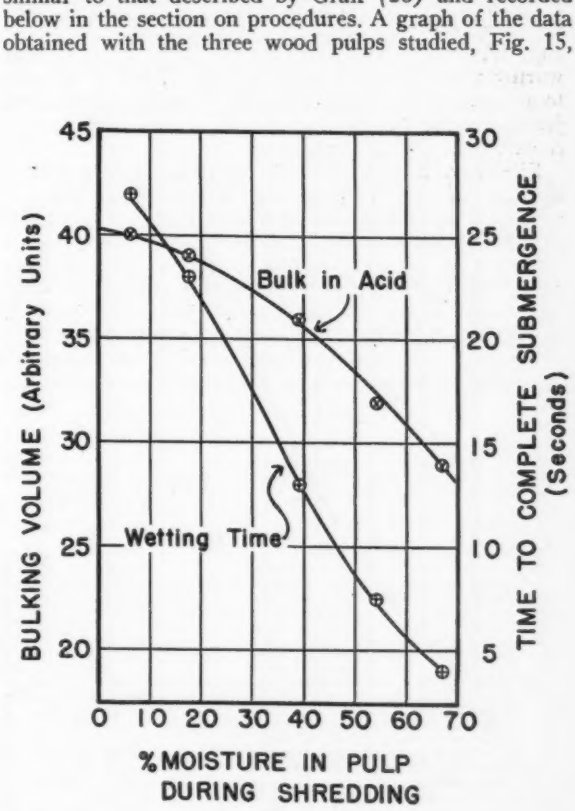

FIG. 14

Variation of Bulkiness and Time to Complete Submergence of Shreds of Pulp Floated on Nitrating Acid When Shreds are Prepared from Pulp of Various Moisture Contents

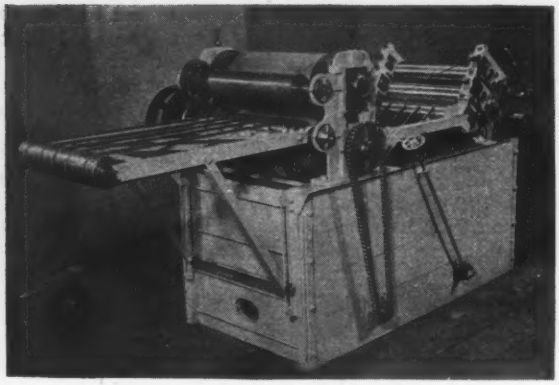

FIG. 28
Wetting Apparatus Viewed from the Delivery End

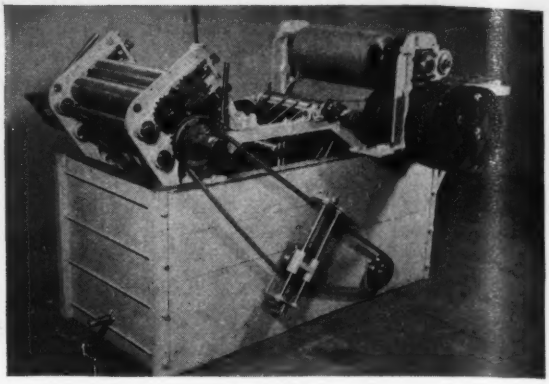

FIG. 29
Wetting Apparatus Viewed from Feed End

showed promise of good correlation. Additional data for wood pulps prepared from other species of conifers appeared to support the correlation, as seen from the upper curve in Fig. 16, plotted from data in Table V. However, when several of the pulps were treated prior to nitration with strong solutions of caustic soda at room temperature to reduce the packing tendency of the fibers, the acid retention data for the treated pulps indicated that these pulps and cotton linters fell into a different category than the wood pulps not so treated, as seen in Fig. 16.

As might perhaps have been expected, acid retention was found to be correlated in significant degree to the extent to which pulp retains water when a dilute suspension of the pulp in water is centrifuged under standardized conditions. This relationship is shown in Fig. 17, drawn from the data in Table V. It is noteworthy that all points, in this case, fell on or adjacent to a single curve, whether or not the pulp had been subjected to the bulking action of strong solutions of caustic soda during purification.

Similarly, a plot of acid retention against the reciprocal of the bulking tendency of the pulp, as measured by the capacity of handsheets of unnitrated pulp to absorb kerosene, also indicated a fair degree of correlation, and, as in the case of the water retention curve, a single line best represented the data (Fig. 18).

Thus, the water-holding capacity of the pulps studied, or their resistance to packing as measured by the kerosene absorption test, is a fair indication of the manner in which the corresponding nitrocelluloses will behave in the acid centrifuge.

Most interesting, however, is the fact that a plot of acid retention as a function of both the number of fibers per gram of unnitrated pulp and the reciprocal of the resistance of the unnitrated fibers to packing shows very good correlation (Fig. 19). This relationship is consistent with the fact that when the reciprocal of the kerosene test is plotted against millions of fibers per gram, Fig. 20, the points fall on, or lie close to, two roughly parallel, almost vertical lines, one of which, as in the case of the lower line of the plot of acid retention against millions of fibers per gram, Fig. 16, represents the points for cotton linters and for the wood pulps treated with either 10 or 17½% caustic soda solution (Table V, items 14, 15, 18, 19, and 23), the other represents the points for the wood pulps not so treated. Apparently the distance between the lines in Fig. 20 compensates for the distance between the two lines in Fig. 16, so that when the acid retention is plotted against the product of the millions of fibers per gram by the reciprocal of the kerosene test, a single line best represents the relationship.

Since the kerosene test is an approximate measure of the volume of voids per unit weight of test sheet,

TABLE V

Note: The data on acid retention tabulated below refer to pulp nitrated to a nitrogen content of 13.15%. Each pulp was nitrated to several nitrogen contents, the data observed were plotted, and the acid retention at nitrogen content 13.15% was read off the plot. Similarly, data on rate of settling of nitrocellulose and on dehydration refer to nitrocellulose of nitrogen content 13.15% beaten to a standard slowness

Item No.	Type of Pulp (Acid Sulphite Process in Every Case)	Kind of Wood Used	Concentration of NaOH Solution Used in Pulp Purification	Temperature at Which NaOH Solution Was Used	Number of Fibers per Gram of Pulp, millions	Kerosene Test Standard Hand-Sheets, ml. kerosene/g. fiber
1	Fernandina B-grade nitrating	Southern pine	Information not available	Not available	2.5	2.49
2	Weyerhaeuser B-grade nitrating	Western hemlock	Information not available	Not available	3.0	2.30
3	Brown Co. B-grade nitrating	About 60% red spruce, 40% balsam fir	About 0.6%	200° F.	6.5	1.64
4	Laboratory prepared from the wood	Slash pine (Florida)	0.56	200° F.	2.0	1.99
5	Laboratory prepared from the wood	Seasoned white pine (New Hampshire)	0.67	200° F.	4.6	2.07
6	Laboratory prepared from the wood	Green Norway pine (New Hampshire)	0.56	200° F.	5.4	2.21
7	Laboratory prepared from the wood	Eastern hemlock (New Hampshire)	0.56	200° F.	6.3	1.96
8	Laboratory prepared from the wood	Green tamarack (New Hampshire)	0.56	200° F.	4.4	2.24
9	Laboratory prepared from the wood	Green tamarack (New Hampshire)	4.75	Room	3.7	2.17
10	Laboratory prepared from the wood	Winn County spruce (Maine)	0.56	200° F.	5.8	1.86
11	Laboratory prepared from the wood	Canadian black spruce (Prov. Quebec)	0.67	200° F.	5.5	1.97
12	Mill unbleached stock purified in laboratory	About 60% red spruce, 40% balsam fir	None used	——	6.9	1.30
13	Same as Item 12	About 60% red spruce, 40% balsam fir	5.5	Room	7.0	2.33
14	Same as Item 12	About 60% red spruce, 40% balsam fir	10.0	Room	7.0	4.32
15	Same as Item 12	About 60% red spruce, 40% balsam fir	17.5	Room	6.2	4.60
16	Laboratory prepared from the wood	Green white pine (New Hampshire)	None used	——	4.0	1.56
17	Laboratory prepared from the wood	Green white pine (New Hampshire)	5.0	Room	4.9	1.93
18	Laboratory prepared from the wood	Green white pine (New Hampshire)	10.0	Room	4.1	4.79
19	Laboratory prepared from the wood	Green white pine (New Hampshire)	17.5	Room	3.9	4.94
20	Brown Co. B-grade nitrating	About 60% red spruce, 40% balsam fir	About 0.6	200° F.	6.7	1.68
21	Same as Item 20 after 13.4% fines removed	About 60% red spruce, 40% balsam fir	About 0.6	200° F.	6.3	1.98
22	Laboratory prepared from the wood	Canadian jack pine (Prov. Quebec)	0.67	200° F.	6.8	2.20
23	Smokeless grade linters	.....	Not available	——	2.5	5.83
24	Laboratory prepared from the wood	Fast growth red spruce (New Hampshire)	0.5	200° F.	8.1	1.65
25	Laboratory prepared from the wood	Slow growth red spruce (New Hampshire)	0.5	200° F.	8.3	1.58

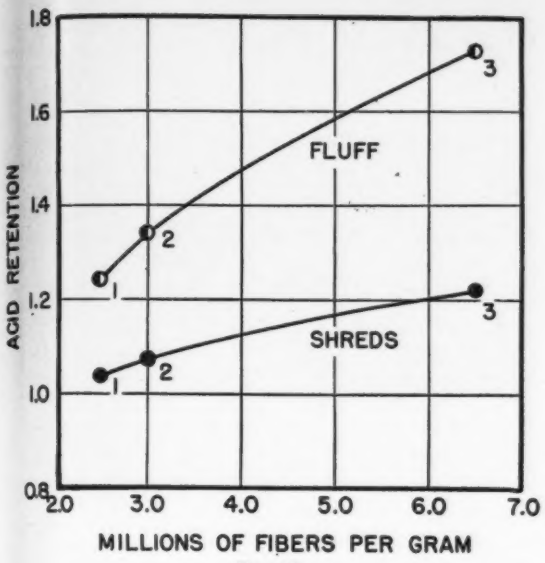

FIG. 15

Acid Retention as a Function of the Number of Fibers per Gram of Pulp. Preliminary Series. (Plotted Points Numbered to Correspond to Item Numbers in Table V)

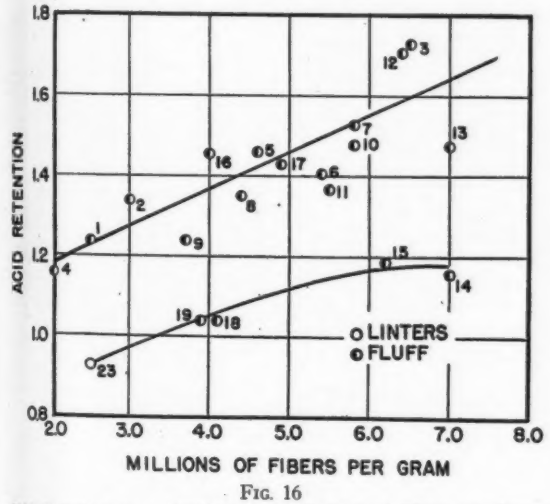

FIG. 16

Acid Retention as a Function of the Number of Fibers per Gram of Pulp. Complete Series

the product of the number of fibers per gram of unnitrated pulp by the reciprocal of the kerosene test is equivalent to the number of fibers per cubic centimeter of voids in the sheet.

If the real density of cellulose fibers is taken as 1.55 *(27)*, the specific volume of the test sheet is manifestly equal to the kerosene test plus 1/1.55. A plot of acid retention against the product of the number of fibers per gram by the reciprocal of the specific volume of the test sheet thus calculated likewise shows very good correlation (Fig. 19A). Hence, acid retention, for the pulps studied, is also a function of the number of fibers per cubic centimeter of test sheet.

The relatively high acid retention of Brown Company Grade B nitrating pulp and of nitrating pulps made by other manufacturers from Northeastern spruce and balsam fir was a source of annoyance in industrial nitration by the dipper process, not only because of the greater loss of acid in the centrifuge, but because, in many instances, the centrifuge basket could be brought up to speed only relatively slowly, else the charge tended to fly over the edge of the basket, with attendant loss of nitrocellulose and contamination of the recovered spent acid.

Nitrating pulp manufactured from Northeastern spruce and balsam fir also tended to reduce the capacity of the poaching tubs in the nitrating plant, because of the relative bulkiness of the nitrocellulose after the normal time of settling in the tubs. A study of settling rates of various nitrocelluloses, prepared in the laboratory and beaten in a stainless steel miniature beater, revealed a strong correlation between the bulkiness of the nitrocelluloses settled under standardized conditions (settling index) and acid retention (Fig. 22), also between the settling index and the product of the number of fibers per gram of unnitrated pulp by the reciprocal of the kerosene test on the pulp (Fig. 25). As in the case of acid retention, the settling index is well correlated with the number of fibers of the original pulp per unit volume of test sheet.

From the correlations indicated in Fig. 25, it may be inferred that, on the average, the settling index, if a sufficient number of tests had been made for each sample, would have been found to be the same for a given pulp whether the nitrocellulose had been prepared from fluffed pulp or from the Brown Company type of shred. In this connection, it is interesting to note that

Product Millions of Fibers per Gram by Reciprocal of Kerosene Test	Item No.	Water Retention Tests, water per g. pulp	Bleached Pulp: Alpha Cellulose, %	Beta Cellulose, %	Alkali Soluble, %	Viscosity, poises	Ether Soluble, %	Acid Retention, g. acid per g. nitrocellulose: Fluff	Brown Co. Shreds	Settling Index, Beaten Nitrocellulose: Fluff	Brown Co. Shreds	Dehydration Ratio: Fluff	Brown Co. Shreds
1.00	1	1.19	90.7	3.3	9.5	54	0.27	1.24	1.04	8.0	10.0	1.06	1.05
1.30	2	1.67	91.9	3.4	9.6	80	0.18	1.34	1.07	9.4	13.5	1.10	1.08
4.0	3	2.39	92.3	3.5	9.2	65	0.26	1.73	1.22	18.2	16.4	1.09	1.13
1.00	4	...	93.1	2.6	..	..	0.71	1.16	0.97	9.4	9.9	1.10	1.08
2.2	5	...	94.4	3.2	..	51	0.06	1.46	1.17	13.3	13.9	1.08	1.13
2.4	6	...	93.6	2.9	..	46	0.78	1.41	1.25	13.2	13.2	1.11	1.07
3.2	7	...	93.7	3.6	..	18	0.37	1.53	1.23	14.7	11.8	1.18	1.08
2.0	8	1.66	91.4	3.1	..	42	0.45	1.35	1.09	11.3	9.5	1.08	1.14
1.70	9	1.54	92.7	3.3	..	83	0.52	1.24	...	11.2	...	1.10	...
3.1	10	1.65	92.7	3.7	..	50	0.27	1.48	...	16.3	...	1.06	...
2.7	11	1.60	94.1	2.3	..	96	0.23	1.37	1.10	14.9	15.5	1.09	1.06
5.3	12	2.29	86.5	4.0	..	83	0.61	1.71	...	15.5	...	1.08	...
3.0	13	2.18	90.8	3.4	..	58	0.44	1.48	...	12.7	...	1.11	...
1.63	14	1.49	97.2	1.5	..	82	0.52	1.16	...	9.0	...	1.21	...
1.35	15	1.48	97.3	2.0	..	54	0.31	1.19	...	8.4	...	1.11	...
2.6	16	1.78	86.9	4.2	..	137	0.21	1.46	...	13.8	...	1.09	...
2.5	17	1.76	90.6	3.8	..	80	0.14	1.43	...	9.4	...	1.06	...
0.86	18	1.32	98.7	1.0	..	58	0.14	1.04	...	11.5	...	1.00	...
0.79	19	1.26	97.1	1.6	..	55	0.12	1.04	...	9.8	...	1.06	...
4.0	20	...	92.5	3.2	..	64	0.29	...	1.31	...	17.6	...	1.15
3.2	21	...	...	...	..	..	0.05	...	1.22	...	18.5	...	1.10
3.1	22	...	94.0	1.9	..	31	0.21	...	1.20	15.5	14.1	...	1.11
0.43	23	0.60	98.5	1.5	..	27	...		0.93		8.6		1.02
4.9	24	...	90.5	3.4	..	84	0.56	...	1.26	...	16.0	...	1.20
5.3	25	..	90.5	3.3	..	109	0.39	...	1.19	...	19.4	...	1.14

if the values in the two columns of Table V under the heading of "Settling Index, Beaten Nitrocellulose" are added up for those items in which there are data for nitrocelluloses prepared from both forms of pulp, the sum is 112.4 for the fluffed pulps and 113.7 for the shreds.

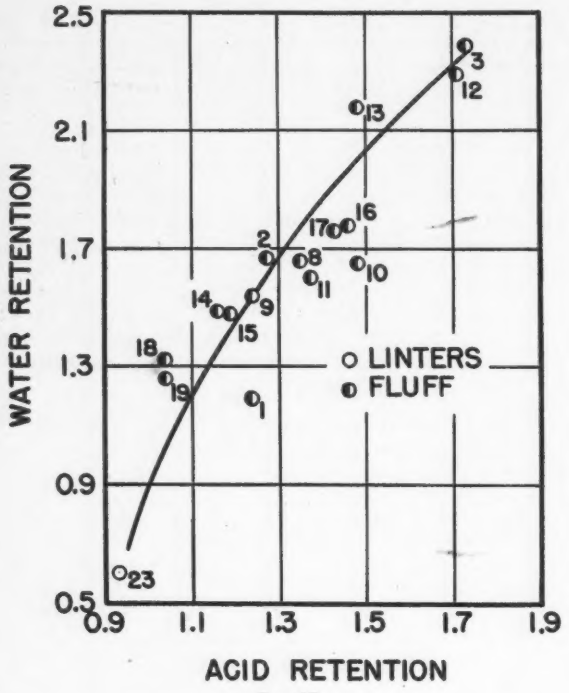

FIG. 17
Comparison between Water Retention of Pulp and Acid Retention of Nitrated Pulp

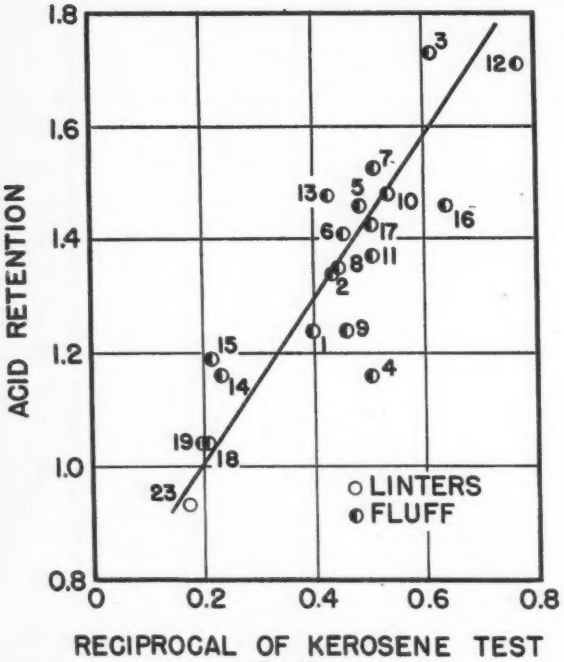

FIG. 18
Acid Retention as a Function of the Reciprocal of the Kerosene Test

Besides the tendency toward high acid retention and low settling rate of the beaten nitrocellulose, another source of annoyance experienced in the nitrating plant with pulp manufactured from Northeastern wood was the relatively high resistance to the passage of alcohol through the nitrocellulose cake in the dehydrating press. Experiments with the laboratory prepared nitrocelluloses indicated that the resistance of cakes of the various nitrocelluloses to passage of alcohol through them was, to a significant extent, linked up with the number of fibers per gram in the original, unnitrated pulp (Fig. 26). In these experiments, the dehydration ratio of the beaten nitrocelluloses was determined by a semimicro method described below under the section on procedures. Plant practice was simulated by the pressing of centrifuged, water-wet, beaten nitrocellulose to remove as much water as possible, then by the injection of alcohol to displace the water, and finally by the application of a high-pressure squeeze to reduce the content of alcohol to a certain minimum level. The ratio of the per cent by weight of alcohol in the alcohol-wet pad of nitrocellulose to the per cent of alcohol in pads of standard cotton nitrocelluloses similarly prepared and pressed was taken as an approximate indication of the way in which the sample of nitrated wood pulp would behave in the dehydrating press. The dehydration ratios listed in Table V and plotted in Fig. 26 are based on nitrocellulose containing 13.15% nitrogen and beaten to a standard slowness.

Thus, it appears that pulps containing a relatively large number of fibers per gram and having a relatively low resistance to the packing of the fibers tend to be less suitable as raw material for the nitrating industry. Since the number of fibers per gram of pulp and the resistance to packing are, mathematically expressed, functions of the cross section of the fibers (see, for example, Table IX and Fig. 27), the slenderness of the fibers of New England spruce and balsam fir, the very characteristic which contributes so greatly to their superiority as raw material for the paper industry, necessitates the inclusion of compensating steps in the pulp mill for best results in the nitrating plant.

Continued in Sept. 30 issue

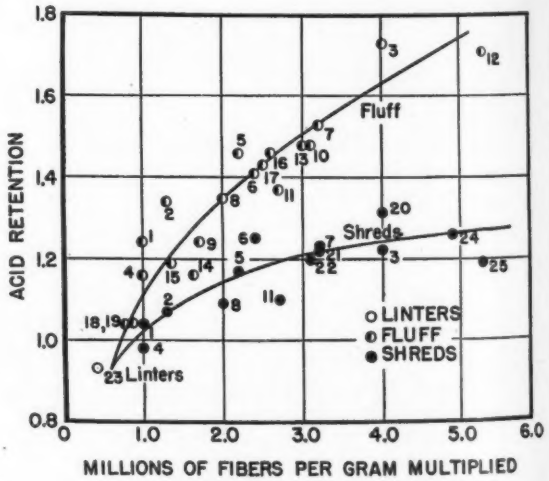

FIG. 19
Acid Retention as a Function of the Number of Fibers per Gram of Pulp Multiplied by the Reciprocal of the Kerosene Test